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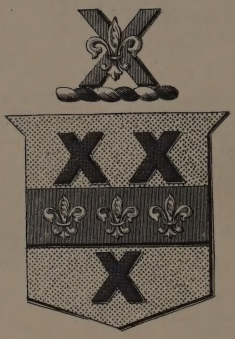


E. Barclay-Smith, M.D.

A PRACTICAL TREATISE

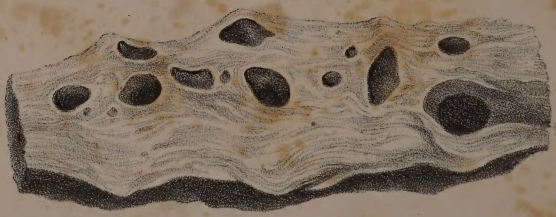
ON

UTERINE HEMORRHAGE.

"In whatever point of view we regard this subject, it must be highly interesting to the philosopher and the philanthropist; shall it be less so then to the physician, who is more immediately concerned in its influence? Shall it be a matter of indifference to him, who has almost the controul of the future comfort and happiness of perhaps an extensive population, and who shall become, as it were, the arbiter of the lives of thousands of individuals?"—Dewees' Introduction to a system of Midwifery.

Fig: 1.

Fig: 2.



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A PRACTICAL TREATISE

ON

UTERINE HEMORRHAGE,

IN CONNEXION WITH

PREGNANCY AND PARTURITION.

———ooo———

BY JOHN T. INGLEBY,

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SURGEON TO THE MAGDALEN ASYLUM,
AND LECTURER ON MIDWIFERY AT THE SCHOOL OF MEDICINE IN BIRMINGHAM.

———ooo———

" NEC TEMERE, NEC TIMIDE."

LONDON:

LONGMAN, REES, ORME, BROWN, GREEN, AND LONGMAN; AND
JAMES DRAKE, BIRMINGHAM.

1832.

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TO

SIR CHARLES MANSFIELD CLARKE, BART. M. D.

PHYSICIAN TO THE QUEEN,

FORMERLY LECTURER ON MIDWIFERY,

&c. &c.

WHOSE URBANITY OF MANNERS,

AND EMINENT SKILL AND ATTAINMENTS,

HAVE PROCURED HIM THE ADMIRATION OF HIS FRIENDS,

THE ESTEEM OF THE PROFESSION,

AND THAT RANK, AND THOSE HONOURS,

WHICH ARE THE JUST REWARD

OF

DISTINGUISHED MERIT,

THIS VOLUME

IS MOST RESPECTFULLY INSCRIBED

BY

THE AUTHOR.

PREFACE.

THE author wishes it to be understood that the observations contained in the following pages, though not limited to pupils and individuals just commencing the practice of Midwifery, are intended chiefly for their use. Having no favorite theory to maintain, he appears before his brethren without any bias except an earnest desire for the inculcation of sound principles, and the establishment of correct practice. To originality of thought this treatise makes little pretension. Its great design is to place before the student, in a concise and prominent point of view, some of the most serious emergencies that can occur in the course of his professional duties ; and when the frequency of these occasions is considered, the subject cannot but be esteemed of the utmost interest, both in relation to the peace and happiness of his own mind, and the welfare of the individuals committed to his care.

On reflecting upon many fatal cases arising from that peculiar and highly dangerous form of uterine hemorrhage which succeeds delivery, it appeared to the author that the subject had not received, either from ancient or modern writers, an attention commensurate with its importance. To the present state of Midwifery, which peremptorily demands the attention of our Legislators, this neglect is in a great measure to be ascribed. That no person should be allowed to engage in its practice, whose competency has not

previously been recognized by some authorized body, is most obvious; and without entering into the question so frequently discussed as to the propriety of employing females, it cannot be denied that a certain degree of instruction, similar to that afforded by Professor Hamilton, in Edinburgh, is essential as preparatory to such an occupation. For instance, to permit any person to attempt the removal of a retained placenta who is ignorant of the structure of the womb, its changes from impregnation, and the nature of the connexion subsisting between the mother and fœtus, (especially when the mass has formed a morbid organization with the uterine surface,) amounts almost to criminality. The consequences, are lacerations and erosions of the womb, disruption of the placenta, and ultimately death. Far better would it be, even under the most dangerous floodings with retained placenta, that pressure and cold applications should be exclusively confided in until competent assistance can be obtained; for the contraction of the womb, upon which alone the cessation of the flooding must depend, is seldom thought of; the mere removal of the placenta being the Midwife's sole aim. Through ignorance on this subject thousands have been hurried out of life, and multitudes of others rendered miserable during its continuance. But it is idle to denounce the ignorant Midwife, so long as we have no laws to regulate this practice amongst ourselves and our students. Questions it is true are sometimes proposed to the candidate for diploma at Apothecaries' Hall, although not forming a necessary part of the examination, whilst the

examiners at the college of Surgeons, take no cognizance whatever of the obstetrical qualifications of the student,—a circumstance which sufficiently accounts for the indifference, not to say contempt, with which many regard this study. Within a very short period only has Midwifery been legally recognized as a part of Medical and Surgical education ; it will not therefore be matter of surprise that up to the present time, so much ignorance should have prevailed, both as respects the treatment of floodings and the management of dangerous diseases connected with the puerperal state. The recognition of the Lecturer's certificate, without subjecting the student to a strict examination, is a mere form ; for so long as the pupil knows that his obstetrical qualifications will not be scrutinized, he will be indifferent in regard to this department of study. The author feels persuaded that if the examiners at these Institutions were once made sensible of the evils attached to the unskilful and indiscriminate practice of Midwifery, of which evils both public and private practice, during a period of sixteen years, has furnished him with a fearful catalogue, the cause of humanity alone could not fail to engage, on behalf of this important branch of the Medical art their most serious consideration. The examinations systematically pursued by many obstetrical teachers of those few pupils who may avail themselves of the privilege, constitute at present the only public security, inefficient as it is, against incompetence in practice.

The weekly examination of the author's pupils impressed

his mind with the conviction, that their improvement would be materially promoted by bringing before them the subject of this treatise in a distinct and definite form, and in a style at once plain and familiar. Admirable as are many of the works on Midwifery, particularly those of Rigby, Burns, Merriman, and Ramsbotham; the arrangement of the subject relative to hemorrhage in those works, does not seem altogether such as is best adapted for the direction of the young practitioner. There is not moreover any distinct treatise in the English language, which embraces the subject of uterine hemorrhage in all its branches. As the object in view in this work has been simply the investigation of those rules which are the most approved in principle and efficient in practice, hypothetical speculations generally have been avoided as incompatible with such a design; for in no science is *practical* information so essential to the student as in that of Midwifery: And although the author has frequently examined the opinions of the best writers on the obstetrical art, yet this treatise may be considered as containing chiefly the result of his own individual experience.* The authors grateful acknowledgements are due to his valued friends, Dr. Pearson and Mr. Hodgson, for the kind encouragement they have afforded him in the prosecution of this work.

* With a view of demonstrating the influence of uterine contractility in resisting hemorrhage, the author has availed himself of an engraving similar to that which is appended to Mr. Bell's paper on the muscularity of the womb, in the fourth volume of the Medico Chirurgical Transactions. The fibrous appearance is rendered rather more distinct from an appropriate specimen. In other respects it differs little from that Gentleman's plate.

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* Erratum p. 230, pro. chap. 22, lege chap. 23.

CHAPTER I.

PRELIMINARY OBSERVATIONS.

Discretion, patience, and humanity are indispensable to the practitioner of Midwifery. His character, however, would be but imperfect, if decision and firmness of purpose were not added: these qualifications being as essential to successful practice in this, as in any other branch of Medical or Surgical science.* If these remarks are applicable to the practice of Midwifery in general, they are especially correct when viewed in relation to uterine hemorrhages, a subject with which the practitioner cannot be too familiar. It is granted that parturition, when perfectly natural, requires little or no assistance from art; in such cases, indeed, the well-informed and the ignorant practitioner may apparently stand upon the same level. It is the capability of combating with a sudden and dangerous emergency which constitutes the chief difference between the able and the unskilful practitioner. Perhaps our most difficult duties are comprised in the treatment of flooding. Ignorance and pretension cannot here, as in natural cases, usurp without detection the place of knowledge and ability. Even prudence and caution, unless asso-

* Take, by way of illustration, puerperal convulsions suddenly appearing under a very aggravated form; what ought to be done? Bleed largely and leave the event to nature? or promote delivery, and, in the latter case, in what particular way? In the puerperal state, the importance also of forming an accurate distinction between inflammation and mere augmented sensibility must be obvious; whilst again, in peritoneal fevers, the danger which would result from confounding the several forms of the disease, and subjecting each form to copious depletion, admits not of question.

ciated with other qualities, will not avail. It must ever be remembered, that temerity on the one hand, and indecision on the other, are alike adverse to judicious and successful practice. Precipitancy may affect present safety or future comfort. Delay, on the contrary, may be attended with the most imminent peril.

In the graver hemorrhages more particularly, whether antecedent or subsequent to delivery, alacrity and promptitude are indispensable; hesitation is often fatal in its consequences, life is fleeting away, and, when time does not allow of a second opinion, the practitioner is at once thrown upon his own resources. His liability to such an occurrence should lead the student to a thorough cultivation of every branch of this important subject. He would then repair even to arduous undertakings with comparative composure: if ignorant and unskilled, he will either be in perpetual confusion, or, if not insensible to the best feelings of our nature, become disgusted with the pursuit.*

In the ordinary routine of Midwifery, the anxiety of the young practitioner terminates with the delivery of the patient; but he must entertain a very confined idea of his duty, if he supposes that no emergency may arise to call forth his utmost energies. The actual process of parturition may indeed have terminated; yet under an active hemorrhage, his responsibility, so far from being at an end, may more correctly be said to have but just begun. And especially

* I could in confirmation of this statement detail several cases of hemorrhage from the placenta being fixed over the os uteri, in which the Surgeon employed, from incompetence, abandoned his duty when death seemed to be near at hand, leaving the patient to her fate. In two instances, turning was successfully performed by other practitioners; in a third, death happened in less than half an hour after delivery.

are his exertions now called in requisition if it be necessary to introduce the hand into the uterus, a measure sometimes essential to the preservation of the patient.

If the student is unimpressed with the value of human life, his own self interest, so closely interwoven with his success in the obstetric art, paramountly demands an intimate knowledge of these very difficult duties. When a sudden emergency occurs, his incompetency, if not embarrassing to himself, will be apparent to others, and injurious to his worldly reputation.

It has been held, that the loss of one patient in labour is more hurtful to the practitioner than twenty by sickness. Should this bereavement occur in the case of the mother and guide of a numerous infant offspring, the deprivation, under any circumstances irreparable, would be regarded with feelings peculiarly compunctious when associated with incompetence in practice; whilst on the other hand, as Denman observes, when speaking of hemorrhages, "the safety of the patient, and the preservation of the child, are events which give inexpressible satisfaction, and adorn the reputation of the practitioner."

Notwithstanding the bountiful provision of nature in the process of parturition, the event of labour will sometimes be unsuccessful. All material discharges of blood, at the close of pregnancy, are calculated to excite alarm, and should engage the utmost vigilance of the practitioner, as in the absence of skilful treatment the life of the individual may be reduced to imminent peril. The danger attending hemorrhages which arise during pregnancy is admitted by all authors. The father of physic, Hippocrates, records the fol-

lowing sentiment—"In fluxu muliebri si convulsio et animi defectus advenerit malum." With what feelings hemorrhages were regarded by Dr. Hunter may be estimated by the following energetic passage, extracted from an apparently correct manuscript copy of his Lectures now before me, "There are two things which I am frighted at in midwifery; one is a flooding, and the other convulsions."

To hear of an experienced country practitioner never having lost a patient either in parturition or within the month, may possibly excite a degree of surprise; and yet the statement may be perfectly true. But it might easily be shewn that this exemption from the casualties incident to the obstetric art is of very partial application. Otherwise, what would be the inference? It must either imply perfection of skill in the accoucheur, or extraordinary resources of constitution in his patients. To refer the exemption to chance, would be an induction at variance equally with philosophy and truth. The explanation directly involves in it the habits and associations of life, both moral and physical. Something also may be attributable to climate and the influence of season. The influence which the atmosphere exerts over the nervous and sanguiferous systems, more particularly after delivery, and especially where there exists a predisposition to morbid actions, has long been matter of observation. In the recovery of health, the advantage which a person residing in the country possesses over the inhabitant of a populous town or city, must be quite obvious. Excitement is a prevalent feature in the one, whilst a tranquil circulation characterizes the other. As a familiar illustration, I may select a case of bad compound fracture of the leg. In the process of reparation, the difference between pure air and a tainted atmosphere is most conspicuous. What is the result in London?

The patient generally dies. What in the country? The contrary may be stated. Much of course will depend upon the predisposition of the body. In the department of Midwifery we may adduce puerperal fever as an illustration of the same point; for if we examine the records of this disease, its greatest fatality will be found associated with the names of London, Paris, Vienna, Antwerp, Dublin, Edinburgh, Aberdeen, Sunderland, and Leeds. I need not observe to what danger women are exposed when any of the exanthematous diseases appear in or shortly after parturition. I have seen scarlatina manifest itself the second day after delivery, and carry the patient off under sixty hours. For a natural function, then, parturition is attended with much danger, and skilful management is indispensable to the security of the patient.

It has been affirmed that women die in parturition more frequently at the present day than formerly. That we are progressively departing from simplicity of life is as palpably true as that population is vastly increasing, and, taking this into the account, I am satisfied that an impartial enquiry would establish the converse of the affirmation. It would be proved, that since men have been generally employed, fatal events in Midwifery have rarely happened, when compared with the experience of former days. We find Mr. Michell * stating, that in his own immediate neighbourhood, out of twenty-one deaths in parturition, nineteen were attended by females only.† In this country it is difficult to obtain an average of the number of women who die in child bed.‡ On the continent, the alleged mortality is frightful.

* Michell on Difficult Cases of Parturition.

† See an excellent Paper on the Art of Midwifery by Dr. Merriman, in Volume 35, Number 206, of the Medical and Physical Journal.

‡ In Dublin one in ninety-two,—in London one in a hundred and nine.

To what particular states of the system this is to be attributed does not directly appear. My own observation would point out two prominent causes, hemorrhage and peritoneal fevers. It is supposed that hemorrhage rarely terminates fatally; but fifteen years of public and private practice afford me valid grounds for asserting the contrary. Mr. Robertson also, one of the Surgeons of the Manchester Lying-in Charity, an institution which relieves upwards of 4000 patients yearly, in his remarks on the expulsion of the placenta, published in the third number of the North of England Medical and Surgical Journal, observes, "More women die of hemorrhages succeeding labour, than from all the other fatal causes of parturition taken together." It is very difficult in the practice of a Lying-in Hospital, to obtain an estimate of the average number of deaths arising from this cause, for as Dr. Joseph Clarke observes, "Patients so situated are afraid to leave their own habitations to go to an hospital."* Since my attention has been more closely directed to this enquiry, I have been surprised at the great number of reported deaths, not only in connexion with unnatural implantations of the placenta, but also after ordinary parturition, varying from a few hours to more distant periods of eight or ten days after delivery. As these events usually happen amongst the poor, particularly those of a dense population, they excite no attention beyond the passing hour.

The disparity in the number of fatal results in the case of human when contrasted with comparative parturition, has been often advanced by theorists in the way of animadversion upon the principle of interference, and has been as often satisfactorily answered by practitioners of distinguished

* Clarke's Report, vol I. page 379, Trans. of the King's and Queen's Coll. of Physicians in Ireland.

acquirements and acknowledged integrity. Independently of difficulties arising from the form of the pelvis in the human female, and the comparatively large size of the fœtal head, the peculiarity of the placental economy necessarily exposes women to a degree of hazard which by no means attaches to the brute. Denman observes, "When any portion of this (i.e. the placenta) is separated, the orifices of many of the large vessels of the uterus are opened, and a considerable quantity of blood is immediately discharged, far beyond what could possibly be lost in any animal, though of a much larger size; and if the uterus were to continue distended, the orifices remaining open, there would be a dangerous or a fatal hemorrhage. For not only the blood circulating in the uterus would be immediately poured out of its vessels, but all which is contained in the body might be drained, and the patient speedily perish, if she were not relieved by art; and yet no animal ever was or could be destroyed, or brought into danger, by this circumstance."* When the organization is considered, it will appear obvious that when the vessels proceeding from the uterus to the placenta, which are about the size of goose quills, are not firmly constringed by the surrounding tissue, there can be no security from danger even in the most simple labour.

Though animals in a state of nature rarely die in parturition, the reverse attends their domestication. At the same time the placental economy secures them in a great degree from the dangers to which the human female is exposed. Dr. Bland, writing on this subject, observes, "Tedious, difficult, and dangerous parturition is not confined to women; it is not unfrequently the lot of animals."† I

* Denman's Introduction, vol 1. page 388.
† Observations on Human and Comparative Anatomy, p. 37.

am informed by an extensive and intelligent breeder of cattle, that several of his flock have died from a copious hemorrhage after the expulsion of the lamb, allowing at the same time, as he did, that a moderate flow of blood is a safeguard against inflammation. From what I could collect, it would appear that the ewes very generally perish when the young are withdrawn by a forcible delivery. Some cases of death previous to lambing had occurred, but whether from rupture of the uterus or not, I was unable to ascertain. Mortification is ordinarily assigned by the vulgar as the cause of death.*

The same observations will apply to the canine race; the farmer, to whom I have just alluded, lost two valuable bitch pointers last year; one died directly after expelling the first whelp; in the other the expulsive efforts were unavailing. I have known other instances of animals perishing before parturition was concluded.

To the mismanagement of the secundines may be attributed many of the dangers incident to human parturition and the puerperal state, especially such as are the result of hemorrhages. Under this impression, I have been induced to lay down some plain directions respecting the removal of the placenta.

* Medical practitioners, in extensive grazing countries, have it in their power to determine very interesting and important points in comparative parturition, and also in conception. The subject of re-production, a theme so sublime to the inquisitive mind, is still involved in much darkness. Indeed, if the immortal Harvey could again take his stand amongst us, would it not appear to him, that, in this branch of Physiology, our knowledge remains more imperfect than in any other department of science?

CHAPTER II.

ON THE TOO EARLY RETIREMENT OF THE PRACTITIONER AFTER THE DELIVERY.

The abrupt departure of the attendant, immediately after the expulsion of the placenta, is fraught with imminent danger, and cannot be too forcibly reprobated: for, since hemorrhage may occur on the termination even of the most favorable labour, no plea can with justice be admitted as an excuse for precipitancy in retiring. This practice, generally speaking, is confined to the poor; the accoucheur leaves the house either before or immediately after the patient is in bed, and thus, when hemorrhage ensues, no effectual treatment can be had recourse to. It is more than probable also, that in order to apply the bandage, the woman will be seated in an erect position — a position at such a time peculiarly dangerous, as it frequently induces both syncope and flooding. The higher classes have not to complain of this neglect, for if in this rank of society, the successful exercise of obstetrics materially conduces to the practitioner's reputation, so mismanagement in this department of practice will inevitably injure the greatest fame. No man, therefore, will incur so wanton a risk; but as respects life, moral responsibility admits of no distinction between the rich and the poor.

The presence of the practitioner is indispensable when hemorrhage ensues, in order that an immediate check may be given to the effusion. If it is suffered to proceed for any length of time, and is followed by recurrence of syncope, and

spasm of the involuntary muscles (sometimes accompanied by violent screaming or even general convulsions), it is to no purpose that the hemorrhage is then arrested by artificial means or even ceases spontaneously. The brain has too long been deprived of its wonted stimulus, the balance of the circulation cannot be restored, the heart beats feebly and intermittingly, the patient becomes cold, perhaps falls into a state of stupor, and is soon numbered with the dead. I could cite several instances in proof of the fatal consequences of the too early departure of the attendant. Four shall suffice.

Case 1.—After the placenta had been withdrawn and the practitioner had left the house, hemorrhage ensued. He was followed almost immediately to his residence; but before he could return, though a very short distance, his patient had expired in consequence of the flooding.

Case 2.—A friend of mine, in the presence of a brother practitioner, had turned the child in an arm presentation. They left the patient apparently comfortable, with the uterus distinctly contracted, being small and hard. In less than an hour after delivery she died of hemorrhage, although the quantity of blood lost did not exceed a pint.

Case 3.—A poor woman was delivered naturally both of the child and the placenta. In half an hour after the surgeon had left the house she became very pale and faint, and before he could return, life was extinct. Upon examining the body, there was no external appearance of blood, but the abdomen was very much swollen, owing to the uterus being filled with coagulum.—It contained nearly three pounds.

Case 4.—A lady previously in perfect health was delivered

under very favorable circumstances. A flooding arose, not very copious in amount, but attended with alarming syncope. The usual means were promptly applied; recovery seemed to be progressing; and the practitioner, who had remained nearly three hours after the delivery, now quitted the house. Immediately after his departure, the symptoms of exhaustion recurred, and, though there was no material return of hemorrhage, the patient became comatose, and died in half an hour. Very little blood was contained in the uterus, which was tolerably contracted.

In our ordinary practice, we should remain with the patient at least an hour, or an hour and a half after delivery, even at the expense of much personal inconvenience: for when the circulation, which is often feeble directly after the termination of labour, is fully restored, hemorrhage will frequently arise. When a woman has had flooding after a former labour, she ought not to be left for four or six hours after her delivery, since hemorrhage, though it usually arises within the first hour, sometimes occurs much later. We cannot be too watchful in guarding against hemorrhage, or in adopting vigorous measures on its first commencement. After a *severe* loss of blood, no change of position can with safety be admitted under twelve, or possibly twenty-four hours. This is a rule of no inconsiderable importance, and the practitioner must not fail to enjoin its strict observance, as upon it the welfare of the patient in a great measure depends. Even when the effusion has apparently ceased, we must be slow in quitting the house, for as Burns observes, "the hemorrhage may be renewed, and the patient may be lost before we can see her." In case of renewed hemorrhage, pressure should be continued for three or four hours lest blood should accumulate

within the uterus, and thus convert an open into a concealed effusion. If, after waiting a proper time, we find the uterus firmly contracted, and the napkin *moderately* stained, we may conclude that all is well, and may leave the patient with feelings of satisfaction.

CHAPTER III.

ON THE APPLICATION OF BANDAGES, AND THE GENERAL MANAGEMENT OF THE PUERPERAL STATE.

To persons not familiar with dangerous cases of Midwifery, it may appear trifling to dwell upon the utility of bandages. It cannot be denied, however, that upon their efficient application, the comfort, and in some instances the safety, of the lying-in woman, essentially depends. Their value can be duly appreciated by those only who have formed an experimental acquaintance with the subject. Though often insufficient to restrain a copious hemorrhage, their general advantage and security, especially as a means of prevention, cannot be too strongly insisted upon.

The efficacy of pressure and friction in promoting uterine contraction had been publickly taught for a series of years, but it remained for Dr. Power fully to establish in this country their utility in furthering imperfect expulsive efforts: though the principle had long been acted upon in different parts of the East.

We have numerous instances on record, in which persons who have suffered from a succession of hemorrhages, have become altogether exempt from such attacks on using a proper bandage.* In women of pendulous abdomen, the

* It is stated, since the construction of Dr. Gaitskell's bandage, a very simple contrivance, that out of seven thousand cases occurring in his Midwifery practice, during the space of forty-five years, he could not recollect one single instance of fatal uterine hemorrhage.

comfort derived from them during the latter weeks of pregnancy is very striking; but the form of the bandage worn during gestation must of course be very different to that used after delivery.*

The bandage, however, is most useful when applied on the accession of labour, and so adjusted as to maintain in the several stages a pressure corresponding with the uterus in its progressive evacuations of the liquor amnii, the parts of the child in succession, and the placenta. In the management of the secundines (especially in persons who have borne many children), the bandage is peculiarly advantageous. On the expulsion of the child, the great flaccidity of the abdominal coverings allows the uterus to incline so far over the pubes as to favor retention of the placenta. This inclination is directly counteracted by the bandage, which by supporting the muscles, and preserving the elasticity of the integuments, retains the uterus in the central line. After the placenta is expelled, the compression which the bandage makes upon the uterus, conduces to its retreat within the pelvis (the neck retiring within the true pelvis and the body and fundus remaining above the brim), and thereby opposes a distension of its parietes under an internal effusion of blood, which effusion is immediately promoted by the uterus remaining unconfined in the abdominal cavity. And yet how seldom

* I allude to the bandage commonly used, but I have modified Gaitskell's, so as to answer for either state, by inserting on each side, for the hips, two pieces of cloth, commonly termed gores, four inches in depth, and three in width at the lower edge, and placed one inch and a quarter apart. Two plaits adapt it for fitting the back. The bandage has two rows of loops with corresponding tapes, and averages from 30 to 36 inches in width, and from 15 to 18 in depth at the centre. As buttons are placed at different distances round the lower edge of the bandage, understraps may be used if needful. This answers every purpose, and can be made sufficiently reasonable to be within the reach of the most indigent.

is a bandage resorted to until after delivery; and in the case of the poor, who from their prejudices are commonly delivered upon the bed, and in their usual dress, it frequently happens that the most dangerous period for the occurrence of hemorrhage is passed before the bandage can be applied. In such cases, it is generally not only too slack, but placed so far above the uterine region as to afford no support whatever to the organ. When applied under a state of extreme atony of the uterus, although the parietes of the organ may be brought partly into contact, yet from the feebleness of the contractile powers the flaccidity will remain. More decided measures will then be indispensable.

Beneficial as a bandage proves in sustaining the uterine energies in individuals prone to syncope, its application during the attack is highly objectionable; quiescence and the recumbent position being then most desirable. Rather than disturb a woman at such a moment, it will be better to pass a large towel or broad piece of linen external to the clothes, and draw it as tight as it can be borne. The discharges and wet linen, including the napkin and folded sheets, must be removed from about the person as soon as possible, and dry linen substituted. After reposing an hour, or longer if needful, a suitable bandage may be applied. Care must be taken in conveying it round the body, not to disturb the position of the patient. The under garment, which during the last stage of labour ought to be away from the discharges, may now be adjusted; and a petticoat which opens in front being drawn underneath her, the broad top-band should be pinned sufficiently tight to afford an agreeable support. If the bed has been properly prepared, the patient may now be placed in it, or if she is already in bed, laid on the opposite side, slowly and without raising her. The

plan of interposing between the bandage and uterine region a thick and unyielding compress made of folded napkins, answers very well in common cases, though it does not exert sufficient pressure to restrain an active hemorrhage. It would conduce much to the safety of the patient, if the medical attendant would always superintend these duties of the lying-in room, and not consign the adjustment of the bandage altogether to the nurse. For since nurses frequently call his attention to the "uterine tumour," regarding it as an unnatural swelling, it is not very probable that they will apply the pressure over the part where it is most needed. The bandage, when applied before delivery, does not prevent the state of the uterus being accurately determined: but when applied after delivery, the practitioner, should previously ascertain by placing his hand over the fundus and body of the organ, whether the requisite contractions have occurred, and if needful solicit them. After four or six hours have elapsed, it may be necessary to slacken the bandage, agreeably with the feelings of the patient, whose comfort will also be promoted by excluding the atmospheric air from the external parts. I avail myself of Dr. Blundell's directions on this point—

"In performing this office, you take a napkin dry and properly aired by the nurse, and fold it into an oblong form, and the woman lying on her left side, you place the napkin over the pubes, carrying it up in front and behind, so as to cover the genitals. A second napkin prepared in the same manner, you pass it between the bed and the hip below, afterwards carrying it upwards, so as to fold it over the hip above; and, then, taking a third napkin, you lay it over the hips above, afterwards carrying it beneath the under hip. By the application of these three napkins, the centre of the person

may be kept very secure, so that the patient is shut out, as it were, from all the blood and water, and other moisture, that may lie about her person, the access of the cold air being also intercepted."* Or, if this plan is considered not sufficiently simple, let a dry napkin be applied to the vulva, and a second, of large size, be placed completely underneath the hips, and conveniently secured in front.

The precautions necessary to be observed after ordinary parturition, claim peculiar attention when that function has been performed under circumstances of difficulty or danger. For several hours after delivery, the patient should observe a state of entire bodily repose, and the apartment be kept perfectly still, and of a uniform cool temperature. In some instances a light cordial may be needful, but generally the diet of the first three days should be quite simple, consisting of toast and water, tea, gruel, and panado. Weak broths, and a gradual return to her usual diet, may then be allowed. When the urine has been retained upwards of twelve hours, a slight change of posture, or heated cloths placed over the pubes, will usually afford the desired relief; otherwise, the uterus must be gently raised by means of the finger, or the catheter must be employed.

On the placenta being expelled, or the infant being put to the breast for the first time, the painful contractions of the womb, called after-pains, speedily arise—rarely however in the instance of a first delivery. After any material loss of blood, their appearance, as evincing an active contraction, may be hailed with much satisfaction. After-pains, though usually occasioned by the presence of small coagula, may

* Lancet, No. 265. p. 801.

proceed from excessive sensibility, or the mere contractions of the uterus, its cavity containing no solid substance whatever. They accompany the efforts of the womb when returning to its ordinary size and firmness, and so far are salutary and require no restraint. But when severe and long continued, these paroxysms sometimes occasion febrile disturbance, the uterus becoming large, and highly sensible to the touch; and when attended with a defective flow of the lochia, they may be considered as denoting a congested or inflamed state of the large uterine veins.

After delivery the uterine parietes are more or less thickened, and the vessels remain in a gorged state. This volume gradually diminishes in bulk, until the organ has acquired its unimpregnated size and site.* During this process, the thinner parts of the blood ooze, or may be said to be squeezed, into the uterine cavity, from the ends of the vessels which become exposed on the separation of the placenta. This discharge, constituting the lochia, and continuing usually about fourteen days, though sometimes it extends to a much longer period, first assumes a red colour which remains two or three days. Its character then becomes serous, of a greenish hue, lasting about the same time, and succeeded by a pale and sometimes white discharge, which does not wholly cease until the ends of the vessels have become hermetically closed, and this takes place on the uterus regaining its ordinary state.

* "A week after delivery, the womb is as large as two fists. At the end of a fortnight, it will be found about six inches long, generally lying obliquely to one side. The under surface is still bloody, and covered partially with a pulpy substance like decidua. It is a month at least before the uterus returns to its unimpregnated state, but the os uteri rarely, if ever, closes to the same degree as in the virgin state." —Burns' Midwifery, 6th edition, p. 589.

If the bowels have not been evacuated, a mild aperient, or an enema, may be prescribed on the third day. In the administration of purgatives, I am governed in some measure by the habit of the patient, but principally by the condition of the breasts. When the breasts are in a flaccid state, there is no occasion for the bowels to be acted upon before the period specified. When they are turgid, or the secretion of milk is copious, castor oil, or neutral salts combined with magnesia, may be requisite twenty-four hours after delivery, lest inflammation of the breasts, head ache, or other uncomfortable feelings should arise.* During the efforts of the uterus to return to its natural size, the organs in the immediate vicinity should be kept in as quiet a state as possible. I think many puerperal diseases, for instance, prolapsus uteri, protracted lochial discharges both of the menorrhagic and serous kinds, and intestinal irritations, justly referrible not only to sitting up too early, but also to the premature and injudicious employment of purgatives, which, by provoking muscular contraction at such a moment, directly defeat the intentions of nature. After a severe hemorrhage, aperients, even of the mildest character, should be very sparingly employed, since a renewed effusion is frequently the result of their action. The uterine absorbents will not require the stimulus of purgative medicine to ensure those changes in the organ which are characteristic of its natural and healthy state,

* A simple precaution will in general prevent both milk fever and also ulceration of the nipples, which are frequently occasioned by the nipples being so small and retracted that the infant either cannot obtain the milk at all, or not without subjecting the mother to severe pain. In the one case, the tubes inflame, the milk accumulates, and fever is the result. In the other, the nipples become fissured and ulcerated. By exposing them to the air daily during the last month of gestation, employing a slightly stimulating lotion, and, if needful, the use of the breast pump, or allowing an infant to draw them out occasionally, these troublesome accompaniments of the lying-in month would rarely occur.

unless the system should fail of being reduced in the ordinary space of time, a point to be ascertained by examining the hypogastric region.*

I am aware that after-pains are frequently kept up by accumulations in the intestines, and consequently are much relieved by obtaining free evacuations. But if the bowels have been properly attended to during the last weeks of pregnancy, and especially on labour ensuing, the early employment of purgatives may generally be dispensed with.

When a labour has been attended with unusual difficulty, it is of the utmost importance that the lochial and lacteal secretions should be promoted as speedily as possible. If the os uteri be not plugged up with coagulum, and inflammation be not threatened, the first of these will not fail to be effected by simple enemata and an antiphlogistic treatment. The second will be encouraged by the early application of the infant, aided by fomentations. I hold this latter direction to be highly important, having every reason to believe that threatened uterine inflammations have at once disappeared on this secretion being established; which indeed we might have expected both from the flaccid state of the breasts in puerperal inflammations, and also from the quantity of blood which is rapidly transferred to the lacteal system upon the shrinking of the uterine vessels to their natural size.†

* My practice has afforded me one case only of this kind, and in this instance the patient laboured under very severe anguish of mind. At the end of the second month, the uterus remained very hard, round, and almost as large as it usually is immediately after delivery. The chief distress arose from the œdematous state of the inferior extremities. Under mercurial action, followed by the use of iodine, both externally and internally, the swelling subsided, and recovery was perfect.

† We might here, as respects hemorrhage, infer that if the secretion of milk is sensibly diminished by leeching the pudenda, the converse

We should also carefully observe the pulse, and enquire whether the patient has had comfortable sleep, in order to anticipate those distressing affections of the nervous system (of which wakefulness is one of the first symptoms) so common to the puerperal state. Instead of quitting the bed on the second or third day, a practice too frequent among the poor and middle classes of society, the recumbent position should be enforced for at least a week, especially after an hemorrhage; since, the uterus being longer under these circumstances in attaining its natural size, the vessels do not collapse in the usual time, and prolapsus is the consequence, When a patient has been thus troubled after a previous labour, the recumbent position should be rigorously observed several weeks. This plan has been attended with entire success, even in cases in which the uterus in the early months of gestation had fallen completely through the vulva. Very recently I was called to reduce, at the fourth month of gestation, a gravid uterus which lay completely without the os externum. By means of the largest sized globular pessary and the horizontal position, it was prevented, after its reduction, from again descending, and thus the ascent in the abdomen would be accomplished almost as early as in common cases. The visits of the practitioner should be continued regularly during the first six or eight days after delivery, and occasionally afterwards. To the treatment of after-pains further allusion is made in the Chapter on Opium.

may fairly be assumed, viz. that uterine discharges, when in excess, will diminish on the mammary gland being called into action.

CHAPTER IV.

ON MENSTRUATION OCCURRING DURING PREGNANCY, AND LIABLE TO BE CONFOUNDED WITH UTERINE HEMORRHAGE.

Much diversity of opinion prevails amongst accoucheurs both as respects the nature and source of this species of menstruation. That a discharge frequently appears during gestation in a form resembling the menstrual, there can be no question; at the same time, of all the early characteristics of this state, suppression of the menses is the least deceptive or equivocal — indeed some women never experience any other symptom. These secretions have been confounded with, and treated as hemorrhage, a mistake which may easily be avoided. Great variety is observable in the phœnomena of menstruation as the consequence of pregnancy. So far from being always interrupted, some women are accustomed to menstruate once only after conception, and the discharge may either be unusually copious, or very sparing and disappear in a few hours; or it may return during the first two or even three months in a manner strictly natural. In other instances, though far less common, women menstruate every fourteen days, or even oftener, during the early months of gestation; and with the exception of this undue frequency, the discharge possesses its ordinary character. The catamenia however very rarely appear during the last six or eight weeks, even in persons who have menstruated regularly during the first seven months. To explain the cessation of the menses during the middle or latter months of pregnancy, it will be necessary to advert briefly to the state of

the uterine membrane.* The mere fact of a portion of the cervix uteri being unoccupied by decidua, is altogether inadequate to explain the phœnomena. In addition to this, the os uteri must be wholly or in part free from mucous deposition: the quantity deposited, under a modified action of the parts which furnish the mucus, may be either unusually small, or the secretory process may commence later than ordinary. In such cases, menstruation may not cease until the gelatinous deposit, which surrounds the os uteri, has acquired a solidity which it did not previously possess. This rationale may fairly be presumed, notwithstanding the statement of Hunter, that "in the first four or five months of pregnancy, the plug is very firm, and fills up the cervix so that a probe cannot be passed through it."† If we examine the gravid uterus in the brute at different periods, the mucus will be found soft and rather soluble in water in the early months, and comparatively firm and insoluble at the close of gestation. This observation will apply to the human female, in whom on the accession of labour the plug has been known to escape in a solid form. I am persuaded that the secretion

* In a very beautiful specimen of extra uterine pregnancy, for which I am indebted to Mr. Bellamy, the fœtus, about as large as a humble bee, and quite perfect in its proper membranes, is situated near the centre of the fallopian tube. The decidua uteri, thickly lining every part excepting the neck, at the commencement of which it abruptly terminates, is strikingly displayed. The orifices of the tube were not covered by decidua; for where the tube enters the uterus, the membrane leaves a circular and remarkably defined aperture, a circumstance opposed to Burns' statement that the inner layer of the decidua goes across the aperture of the tube. Like Mr. Langstaff's case, contained in part 2 vol. 7. Med. Chir. Trans. the tube was found to be impervious, excepting within about half an inch from the uterus, but in this gentleman's case, the decidua was not formed. The patient from whom Mr. Bellamy removed this preparation was about ten weeks advanced in pregnancy, and died from internal hemorrhage, occasioned by the rupture of a vessel at the posterior part of the sac. Mr. Langstaff's interesting paper is worthy of an attentive perusal.

† Mss. Lectures.

really proceeds from the uterus, contrary to the opinion of Denman, and the dogmatical fiat of Professor Hamilton, that "it is morally and physically impossible." The supposition is strictly consonant both with the principles of physiology and also with experience. To attribute the discharge to the enlarged vessels of the vagina is a most unphilosophical induction, and unsupported by a single fact. A lady, the mother of seventeen children, on whose observation and veracity every confidence may be placed, assures me that the first two months of her several pregnancies she menstruated as usual; and that during the last three gestations she experienced the catamenia without a single intermission, regularity being observed up to the ninth month, not only as to time and duration, but also in respect to quantity, colour, and appearance, for the secretion did not coagulate upon the napkins. She was, to use her own words, unwell precisely as under ordinary circumstances. In many other instances which have occurred under my observation, menstruation has continued perfectly natural the first seven months of pregnancy. Cases of a similar kind but less striking are by no means uncommon.

The observations of Dr. Dewees upon this subject may be perused with great advantage.

CHAPTER V.

ON CERTAIN STATES OF THE SYSTEM DURING PREGNANCY AND PARTURITION, WHICH FAVOR THE HEMORRHAGIC ACTION.

In persons of plethoric habit the circulation may advantageously be relieved during pregnancy. Small occasional bleedings, aided by quiescence and a simple diet, are calculated to answer two very important purposes,—the prevention both of abortion, and also of hemorrhage after delivery. In persons of leucophlegmatic temperament, in whom the fibres are lax, the circulation feeble, and the liability to hemorrhage after delivery considerable, the propriety of bleeding may admit of question; unless an hemorrhagic tendency should appear generally to prevail. In such cases our means are limited to the skilful management of the labour. Since floodings, both during gestation and after delivery, not unfrequently have occurred in persons subject to intestinal and other hemorrhages, menorrhagia more particularly, I am disposed to think that venesection will in most cases prove beneficial. There is indeed a passive form of menorrhagia arising from great constitutional weakness; but this exists chiefly among the poorer classes; in the middle and higher ranks of society the active form of menorrhagia usually prevails. This fact clearly shews the propriety of occasionally abstracting blood during the latter months of gestation. To lower and tranquillize the forcible and hurried state of the circulation, obviously is very important: and this is most effectually secured by the means proposed.

As a preventive to hemorrhages after delivery, this treatment, at once consonant with the most approved and rational principles of science, and also highly efficacious and beneficial in practice, has received the sanction of the early sages of our art, especially Mauriceau and Dionis; and is strongly enforced by one of the soundest obstetricians of modern times, the late lamented Dr. R. Gooch. The extension however of this principle, by the early writers just mentioned, to bleeding in hemorrhages after delivery, is not only inconsistent with prudence, but incompatible with personal safety.

When a patient has suffered from hemorrhage after delivery, Dr. Gooch very prudently advises us, in a subsequent pregnancy to notice the circulation, and, if excited, to tranquillize it by appropriate treatment. This is simply the revival of a practice which had in a great measure fallen into unmerited disuse. Though it is in the earlier months of pregnancy that vascular excitement chiefly predominates, it may sometimes attend the whole course. Ordinarily, however, congestion is the characteristic of the latter months; the bulk and pressure of the uterus in advanced gestation being in many persons incompatible with freedom of circulation. Accumulation is the result: and the effects may be discerned upon a single or upon many parts of the venous system. Thus, we have varices and œdema of the lower extremities, fulness of the hepatic and pulmonary circulation — denoted by disorders of their functions, epistaxis, and occasionally apoplexy* and convulsions during or preceding labour. In the intestinal canal, the compression is indicated not only by

* In a case of apoplexy, occurring under forcible labour pains, and threatening immediate dissolution, sensibility was restored after a copious venesection, and the labour terminated in a speedy and auspicious manner.

turgidity of the hemorrhoidal vessels*, but also by obstinate constipation, even when the bowels appear to be regularly evacuated; the more liquid parts escaping while the solid are retained for weeks together. This interruption to the alvine discharges is in a great measure attributable to the cramped position into which the bowels are thrown by the gravid uterus. It more commonly occurs in a first pregnancy, the abdominal parietes being tighter than in subsequent gestations.‡

I attended a young lady in her first confinement, who was frequently obliged to take mild aperients in the latter months of pregnancy. On the second day after her delivery, she was seized with irregular hysteria, so closely resembling peritonitis that for many hours it was difficult to form an accurate diagnosis. The abdomen was tympanitic and tender to the touch; but on effecting a full action of the bowels, chiefly by warm turpentine injections, the patient voided hardened scybala, more like calcareous matter than fœces, which filled two chamber utensils. A formidable exhaustion supervened in consequence of this prodigious discharge, but recovery speedily ensued. These irregularities point out the necessity of observing the course of gestation, both as respects the circulation and the secretions generally, more narrowly than we are in the habit of doing: and I am persuaded that if this impression were more generally acted upon, we should meet with much fewer of those acute and formidable puerperal diseases unhappily still so prevalent.

* In the case of a lady liable to hemorrhages after delivery, leeches were occasionally employed during the last fourteen days of gestation to a mass of external hemorrhoids; on the occasion of this delivery she was entirely exempt from hemorrhage.

‡ A similar obstruction occasionally arises in an advanced stage of ovarian enlargement, and generally proves fatal.

By obviating these derangements of function another important end would be obtained; floodings would in a great measure be anticipated. But, whilst peculiar attention should be paid to the state of the bowels during the latter weeks of gestation, extremes must be avoided. Inordinate peristaltic action may provoke uterine contraction prematurely. Constipation, on the other hand, by retarding the circulation in the uterine veins, favors congestion and tends powerfully to promote hemorrhage. I have no doubt many dangerous effusions are to be attributed to the last mentioned cause.

I have observed that dropsy of the amnios has in several instances occurred in persons liable to excessive discharges at the menstrual periods and after parturition. In M. Mercier's essay on the subject, the effusion is attributed to an inflamed state of the membrane. But according to Dr. Lee, the disease has been found associated with a morbid or malformed condition of the fœtus.* Without questioning the correctness of these opinions, it appears to me that the activity of the uterine circulation sometimes exceeds the requirements of natural gestation; this either tends to a rupture of a vessel and extravasation of blood, incompatible with the connexion between the uterus and ovum, or relieves itself by an aqueous deposition within the membranes.

This undue secretion seems essentially different from the effusion of common dropsy. Some time ago, I delivered a poor woman of twins, who was the subject of ascites and general dropsy, of which she soon died, yet the quantity of liquor amnii was very small. I could adduce a very similar instance of *premature* delivery of twins in confirmation of the same opinion.

* Lond. Med. Gazette, Vol. ii. No. 160.

Under the impression that the following case possesses both interest and practical importance, I have ventured to insert it at the foot of the page.*

* A lady, subject to uterine hemorrhage, was affected with dropsy of the ovum in her second gestation. At the fifth month, her size was prodigiously large. The fluctuation was as distinct as in a case of ascites, and the legs threatened to burst. Indeed, had she not experienced aggravated symptoms of pregnancy, no one would have suspected it. At the sixth month the patient, who had then abandoned the idea of pregnancy, was delivered of twins, and a deluge of water reduced her to a state of imminent peril. In the third pregnancy the same symptoms recurred, but earlier than in the preceding. At the fifth month, she was as unwieldy as though she had reached the ninth. Small bleedings, abstinence from liquids, mild purgatives, diuretics, with the horizontal position, carried her on to the sixth—at this period the membranes unexpectedly gave way during the night, and twelve napkins were saturated with the fluid prior to my seeing her early in the morning. The singular part of the case is, that every second or third day the waters escaped, affording relief in proportion to the quantity discharged, being from a pint to a quart each time, so that fresh secretion must have been going on. I can vouch from frequent examinations that the fluid proceeded from the uterus. Either from the thinness of the uterus, or the small quantity of liquor amnii contained within the membrane after these discharges, almost every part of the child could be felt through the parietes of the abdomen, the knees could be distinguished from the elbow, and the head could be brought from the inguinal region to the hypochondrium, and vice versa; just as the sutures of the fœtal head have been distinguished through the abdomen without lesion of the uterine parietes. Indeed, if the fluid had not been unequivocally passed through the os uteri, I should have regarded the case as an extra uterine gestation. I scarcely need say that the fluid was not urine. Urine, I am aware, is not unfrequently mistaken for the liquor amnii in those discharges, which on muscular exertion are passed in the latter weeks of gestation. On one occasion the bladder was quite empty; on another, when the discharge was flowing away, I introduced a catheter, and drew off the urine. As the ninth month advanced, the head rested permanently on the pubes, and could no longer be moved about freely. She attained the full period, and was delivered of a child unusually large. At the second pain the secundines were spontaneously expelled, my hand receiving the mass when at the outlet, lest its weight should tear the membranes. I then carefully examined the whole, and in addition to the aperture in the centre of the membranes, made by the passage of the head, there was a circular one very distinct just at the edge of the placenta. From this aperture doubtless the fluid had from time to time escaped, the patient prior to each evacuation being sensible, by a kind of passive contraction of the uterus, that it was about to come away. The situation of the rent accounts also for my not being able to draw off the liquor amnii with a catheter, though the attempt was frequently tried with a view of accelerating labour. The longest period I had ever

The sufferings of parturition are greater, and far more tedious, in the strong and plethoric, than in persons of spare and feeble habit. Under severe and long protracted efforts the circulation undergoes a high degree of excitement directly calculated to promote hemorrhages after delivery. These remarks have an especial reference to the first stage of labour when characterized by an unyielding state of the os tincœ, the dilatation of which is generally a tedious process. Several days not unfrequently are passed in fruitless efforts to effect it, and oftentimes it is not fully accomplished until the patient has been subjected to severe distress, and the practitioner to much anxiety. By judicious moral and physical treatment, including under this term, simplicity of diet, a cool apartment, a recumbent position, allowing nature full time, avoiding as much as possible examinations per vaginam, and contributing to the patient's serenity of mind, material difficulties may be overcome. More direct relief, however, may be applied. To resort indiscriminately to the ergot of rye, as is frequently the case, is a most unwarrantable proceeding; to prescribe it under great resistance is fraught with much danger to the mother, and will probably be at the expense of the child's life.* The practitioner's time and the patient's safety are here at issue, and there can be no question which ought to be sacrificed. To increase the contractions of the womb would be to risk its integrity; the object should rather be to relieve the tension and lessen the sensibility of

before known to intervene between the rupture of the membranes and the accession of labour was eight days. A respectable Surgeon formerly of this town, knew a case in which a month intervened. In a case related by Mr. Burgess, in No. 372 of the London Med. and Phy. Journal, there was an incessant discharge of the liquor amnii for four months before delivery. In France premature labour has been resorted to by Dr. Duclos in dropsy of the amnios, when attended with local or constitutional distress.†

* See Chapter on the Ergot of Rye.

† Lond. Med. Repos. vol. xi. p. 155.

the uterine fibres, and no treatment accomplishes this object with the same facility and safety as venesection. Highly beneficial as emollient injections, castor oil, and opium, occasionally prove in subduing uterine rigidity, there are many cases in which they fail to produce the desired relief; but it may confidently be asserted, that in the generality of cases, even under the most severe and long protracted pains, the abstraction of from ten to twenty ounces of blood will effect the speedy and complete dilatation of the os internum, and thus terminate in three or four hours, by means of uniform and natural contractions, a process which had previously resisted efforts the most forcible for as many days. Dr. Gooch refers, I suspect, to this class of persons, when alluding to the inadequacy of tonic contraction of the uterus to restrain an hemorrhage post partum under a highly excited state of the circulation. The contrary or atonic state of the uterus more frequently succeeds the excitement of the system which accompanies difficult parturition.

CHAPTER VI.

ON THE MANAGEMENT OF LABOUR WITH A VIEW OF PREVENTING HEMORRHAGE.

Let us now consider, whether, in addition to the physical treatment enjoined in gestation, any plan can be pursued during parturition calculated to prevent hemorrhage. In the several stages of labour every source of irritation should be studiously avoided; and, since the erect position has a tendency to augment rather than to diminish the force of circulation, the recumbent position (although opposed to Denman's directions) should be strictly enforced. Dr. Clarke in his report informs us, as the result of his experience, that by keeping the patients cool during labour, preventing voluntary exertions during the dilatation of the os tincæ, and disallowing cordials, hemorrhage rarely occurred.*

It is universally allowed that hemorrhage is the frequent result of quick labours; how is this to be explained? If tapping, or the unexpected discharge of the liquor amnii, has a direct tendency to produce syncope, certainly the removal of that degree of pressure which accompanies the sudden expulsion of the child will cæteris paribus produce a still greater impression: the inanition itself has been known to prove fatal. If we consider how generally amongst the poor the patient is urged to use forcible voluntary efforts in parturition, it will appear matter of surprise that sloughings, lacerations, retained placenta, prolapsus of the uterus and vagina, as well as

* Trans. of the King's and Queen's Coll. page 380.

hemorrhages, are not of more frequent occurrence. I will mention a single but striking instance of quick labour, succeeded by hemorrhage and a fatal result, which occurred in the practice of my friend Mr. Chawner, of Cheadle.

"A woman was delivered in her last labour after having experienced four pains only. She had the *first* intimation of its approach when sitting at tea. As she had been accustomed to very quick labours, the husband was instantly sent to request me to remain within call: but another pain coming on with great violence, a second messenger was despatched for my assistance. I arrived at the bed side during the fourth pain, the head being already born. The placenta was soon expelled, but an hemorrhage ensued of the most alarming description, which threatened to be immediately fatal. The hemorrhage ceased; but the patient, being attacked in this feeble state with puerperal fever, accompanied with great mental disturbance and abdominal tumefaction, fell a sacrifice to the disease."

In very quick labours, the uterine contractions, though frequently irregular, are sufficiently active to expel the child, especially when the pelvis is large, and the relaxation of the os internum and vagina is considerable.* The different sets of fibres, however, do not shorten in that gradual and permanent manner, which is necessary to the complete disengagement of the placenta, and also to the tonic contraction of the uterus. But, when the fœtus is propelled by successive pains instead of a single effort, the detachment of the placenta from its

* In a case of alleged child murder, if, in addition to a quick (and perhaps a first) labour, the diameters of the pelvis are proved to exceed the standard, a strong presumption is established of the innocence of the accused. Sufficient attention is not paid to these important points in forensic medicine.

connexions is in a great measure accomplished, at the moment when the child is born.

Mr. White, in his directions respecting parturition, after recommending the proper regulation of the bowels, examination as seldom as possible, and, in the advanced stage of labour, the horizontal position, urges the importance of consigning the actual delivery altogether to the efforts of nature.

Pretended aid, or rather officious interference, in the first stage of natural labour, must ever be discountenanced. In the last stage, although frictions may be applied externally when the pains are defective, any direct attempt to disengage either the shoulders or body deserves the severest reprehension. White, in advocating the contrary principle, remarks—

"In this manner I have proceeded for several years, and during that period I can with satisfaction declare, that in natural labours I have never had occasion for the manual extraction of the placenta; nor have I ever been detained a single hour by it; nor since I practised this method have I often had occasion for the use of opiates, or any other medicines, to relieve the after-pains, which have generally been so trifling, both with regard to violence and duration, as not to deserve notice."*

Justly entitled as this author's opinions are to the utmost confidence, still, results so favorable cannot be expected even from the most skilful management.

* White's Treatise, p. 112, 5th edit.

Dr. Osborne, with a view of securing a perfect contraction of the uterus, and preventing retention of the placenta and hemorrhage, not only approves of White's directions, but also advises the retardation of the delivery of the child, after the birth of the head, by resisting the rapid expulsion of the shoulders and body, even in cases apparently the most natural.

Dr. Clarke has adopted with great success a somewhat modified plan. This simply consists in allowing the uterus to empty itself in a gradual manner, according to Dr. Osborne's directions, and also, by means of the hand on the abdomen, supporting the organ, and pursuing the fundus in its successive contractions until the delivery is completed.

This practice was recommended by Dr. Gooch; and I am induced to advert to it thus prominently, since it appears by no means to be either generally understood, or correctly appreciated. The plan is applicable to cases, not only "where the uterus shews a tendency to imperfect action in expelling the fœtus," and where it is very probable "that the same imperfection may extend to the expulsion of the secundines," but to quick deliveries in general.

It is justly remarked both by Puzos and Fodéré, that, by adding some degree of power to the natural effort of parturition, we may preserve in the uterus that faculty for contraction which is necessary to the welfare of the patient.

Objections have been strenuously urged against this proceeding. To oppose resistance to the parturient effort, it is urged, is not only unnatural, but tends to impair the powers of the uterus, inducing irregular contractions, if not endan-

gering the integrity of the organ. Primitive nature, and nature at the present day, are by no means identical. Artificial modes of life demand extraordinary resources. Granting that nature rarely departed from her laws in the early ages, yet the refinements of civilized life have now created a difference most obvious and sensible. To retard the descent of the child in ordinary obstetricism is highly objectionable, since this would be substituting a process of art for a process of nature.

There are two states, however, in which it may be not only justifiable, but even prudent, to enforce this proceeding; provided always that due circumspection is exercised. First, when the head threatens to lacerate the perineum; and secondly, in persons (subject perhaps to quick labours) who have previously suffered from hemorrhages with retention of the placenta; since experience shews how liable such individuals are to similar recurrences.

With respect to the state first mentioned, viz. laceration of the perineum, I feel assured that it occurs more frequently than is generally admitted. The uterus may have become thoroughly dilated before a corresponding relaxation has taken place in the external parts, and under forcible labour pains the perineum may be incapable of resisting the pressure of the head; but by a skilful counter pressure, the palm of the left hand being applied to the perineum, especially to its edge, the right hand at the same time gently opposing the expulsion of the vertex, this accident may almost invariably be prevented. Rigidity of the external parts is common in first labours, particularly in women somewhat advanced in life; and venesection may materially assist in promoting the requisite relaxation.

In reference to the second state, I may further remark, that after a very sudden delivery of the child, the action of the uterus is either irregular, or too feeble to separate the placenta. But if the plan recommended by Dr. Clarke be pursued, the longitudinal and circular fibres, by their uniform contractions (commencing at the fundus and extending to the other parts of the organ in succession), can scarcely fail to detach the placenta or a considerable portion of it, from its uterine surface, on the breech being expelled. An exception to this may arise when the placenta has acquired a morbid organization.

That the uterus might *possibly* be ruptured, I will not deny; but, when the labour is managed with ordinary skill and sagacity, such an accident is highly improbable. At any rate, this would be substituting the exception for the rule. The propriety of the practice, under the limitations stated, cannot admit of doubt. I can bear witness, from actual experience, to the beneficial effects of retarding the birth of the child in persons liable to flooding immediately upon delivery. The annexed detail may serve as an illustration of this.

Several years ago, I was requested by a respectable but now retired practitioner of this place, Mr. Vickers, immediately to visit a patient of his then in labour in her fourth pregnancy. The three former labours had terminated very speedily; but, on the birth of the child, the flooding in each case was so excessive as to impress this experienced accoucheur with the conviction that death would have ensued had he not been at the bed side. He therefore urged expedition on my part, lest the infant should be expelled before my arrival, and a similar hemorrhage supervene. The labour, however, from malformation of the head, proved a tedious

and instrumental one, and the forcible and long continued contraction of the uterus, and gradual delivery of the child, separated the placenta without any hemorrhage whatever.

In order to guard, in cases of this description, against labour being too rapidly completed, Dewees suggests the "*early* evacuation of the waters," that is, "so soon as the labour is active and the os uteri sufficiently dilated or dilatable;"* a hint borrowed from the effects of the premature but spontaneous rupture of the membranes in ordinary parparturition.

When the result of former labours leads to an expectation of hemorrhage, the practitioner should examine the uterus above the pubes immediately upon the birth of the child, and endeavour to obtain, without delay, its speedy and effective contraction. In addition to the bandage, an uniform and well regulated pressure by means of one or both hands, so as to confine the uterus within the false pelvis, and prevent coagula from collecting in and distending its parietes, is admirably adapted for this purpose.

Professor Burns, after recommending pressure, friction, and the exhibition of a full dose of laudanum, immediately after delivery, when a woman is known to be the subject of hemorrhage, adds, "On the first appearance of discharge, perhaps in some instances whenever the child is born, we ought to introduce the hand into the uterus." Under a judicious employment of the means recommended in this chapter, such a measure will be rendered unnecessary. With a view of preventing hemorrhage, White suggests, that instead of tying

* System of Midwifery, p. 496.

the end of the funis nearest the placenta, it should be left without a ligature, under the impression that "by the blood being drained from it, greater liberty would be given to the uterus to contract."* Except in the instance of twins, this plan cannot be injurious, and may possibly prove beneficial.

* It has been recommended by a Continental writer, to inject water through the vessels of the funis in order to detach the placenta, a suggestion very contrary to that of White.

CHAPTER VII.

ON VOMITING.

The sympathy which exists between the stomach and the uterus, is never more conspicuously displayed, than when the latter organ is affected with hemorrhage from whatever cause it may arise.

The efficacy of vomiting in cases of hemorrhage is very uncertain. A full and single act of vomiting, arising instantly on blood being accumulated in the uterus, will often produce a very excellent and prompt effect; the abdominal muscles, in their action pressing upon the womb, empty the organ of its contents; upon this, spontaneous contraction ensues, and, provided the effusion is not renewed, the safety of the patient is ensured.

Under an excited and forcible state of the circulation, the action of vomiting may prove peculiarly beneficial; but, when it is associated with those feeble movements of the heart and arteries which generally prevail in these hemorrhages, it cannot fail seriously to impair the nervous energies, and may even terminate in fatal syncope. Its salutary or injurious effect is indicated by the alteration in the countenance, and the rising or falling of the pulse. It may however be considered a general rule, that when vomiting is not directly beneficial, it will be positively injurious; for the bleeding is far more likely to be renewed, than restrained, by the repeated efforts. It certainly indicates a necessity for prompt interference and active measures, since it is frequently the accompaniment and characteristic of concealed bleedings. This

form of vomiting, though it usually terminates on the cessation of hemorrhage, may nevertheless continue even to the extinction of life.

Immediate and urgent vomiting is usually associated with severe uterine hemorrhages, especially when they arise from inversion and laceration of the organ. In three instances of rupture of the uterus, an opportunity was afforded me of instituting a post mortem examination. The vomiting was instantaneous upon the injury in two of the cases, and blood was found extensively effused in the abdominal and pelvic cavity. In the third case there was no vomiting, but as no degree of re-action took place, the blood effused did not exceed an ounce, and death was occasioned by the injury which the nervous system sustained.

When the vomiting which attends early pregnancy continues, in persons who have previously enjoyed good health, through the middle and latter months, increasing in severity and accompanied by a dangerous prostration of strength, I wish to ask, whether, in the failure of all ordinary resources, and particularly in the absence of any organic disease, the membranes should be ruptured with a view of inducing premature labour? I am induced to propose the question, since several of my professional friends hesitate to answer in the affirmative. The case very rarely happens; and certainly, such a proposal should not be regarded in any other light than as a dernier resort. It must be admitted that the question involves a very important moral consideration. Burns is silent upon the subject. Blundell merely refers to it as a last remedy, but it does not appear whether he ever tried it. Conquest

remarks, "Now and then premature labour, artificially effected, is essential to the safety of such women."* In one instance of severe vomiting, the patient expired shortly before the ninth month was completed, apparently of mere exhaustion, and independently of any organic disease. In a second case death speedily supervened upon delivery. A third instance was associated with a tumour in the abdomen; nevertheless the relief which followed the spontaneous rupture of the membranes was striking. It had been determined in consultation to evacuate the liquor amnii in the course of a few hours; in the mean time the membranes unexpectedly gave way. The patient since her delivery has attained good health, though the enlargement, which is about the size of the gravid uterus at the seventh month, and is supposed to be a disease of the spleen, has not undergone any material diminution.

A fourth case occurred in a woman supposed to be in the sixth month of pregnancy, who for a year preceding had been affected with an organic disease which came on suddenly with fulness and a tympanitic state of the abdomen. The distension was so great that it was impossible to determine the real nature of the disease; but a fluctuation, together with the hardness of the swelling, favored the presumption that it was ovarian. Its progress, though very rapid at the outset, had but little influence upon the constitution, until the period when pregnancy occurred. The patient then began to experience much greater pain and inconvenience, which seemed indeed to be proportionate to the increase of tumefaction. Her sufferings, however, were suddenly augmented in consequence of a fall against a chair. The day following this accident, the symptoms assumed a character

* Conquest's Outlines, p. 47, 4th edit.

imminently dangerous. The pain in the abdomen was constant, the pulse so rapid and feeble as scarcely to be distinguished, the countenance indicative of great distress, and the stomach rejected alike food and medicine. At this time (about twenty-four hours after the accident), I visited the patient conjointly with her medical attendant. We at once resolved, first to ascertain whether she were really pregnant (for the characteristics of gestation had been very faint), and secondly, in the event of her being so, to rupture the membranes. As the head did not present, it was found impossible, without passing the hand in the vagina, to determine the fact of pregnancy. From the early period of gestation, the dilatation of the os uteri so as to admit the fore-finger was not accomplished without difficulty, and the membranes were barely felt when the finger was passed its entire length in the uterus. The recession of the membranes made it necessary to use a long instrument in order to perforate them; a knitting needle was employed for this purpose, and answered very well. About five ounces of water were immediately discharged, and no more escaped at any subsequent period. The knee was found to present; but we had previously determined, whatever might be the presentation, to rupture the membranes, and thus afford the patient, as we believed, the best chance of relief, without regarding the difficulty which might attend the delivery. She remained free from sickness, and in all respects greatly improved, until the next day, when she experienced a temporary return of vomiting. Labour pains commenced on the following morning, and terminated, after two hours, in the expulsion of a small fœtus not exceeding the age of five months. The placenta quickly followed—very little suffering and scarcely any discharge attended the process. It is computed she did not lose three ounces of blood. Relief however did not follow. The ab-

dominal pain continued very distressing, the symptoms of exhaustion recurred, and death took place the following day. On examining the abdomen after delivery, a hard tumour was found extending from the pubes to the umbilicus, so that the trocar must have been used above the umbilicus had tapping been resorted to. Post mortem examination was refused.

It may be asked, why was not paracentesis abdominis had recourse to, in preference to the induction of premature labour. The answer is simple. We had reason to believe that the dropsical effusion was either ovarian, or the consequence of some diseased growth. If the former, the operation would have been undesirable, from the uncertainty of the number and size of the cysts, the difficulty of emptying them, and the rapidity with which dropsical secretions are reproduced. If the latter, whilst the state of exhaustion would scarcely have warranted the removal of a very large body of water, the pressure of the tumour would have been diminished temporarily only; and under either supposition, if inflammation had taken place in consequence of the accident, the principle of tapping would have been highly objectionable. The result also of the last case somewhat influenced our determination. Objections certainly attach to the rupture of the membranes. The period of pregnancy may not be properly defined, the liquor amnii very small, the presentation unnatural, labour tedious in coming on, and the fœtus will most probably be deprived of life: but in the present instance we had only a choice of evils.

In dropsical accumulations within the peritoneal sac, whether occasioned by a plethoric or an inflamed state of the

blood vessels, paracentesis is infinitely preferable, both morally and physically, to the evacuation of the liquor amnii.* Denman strongly discountenances paracentesis abdominis during pregnancy, and as a *general* rule his objections would hold good; circumstances may however occur to render that operation essential, not merely for the alleviation of aggravated sufferings, but also for the preservation of life.

Vomiting is said to have proved fatal, independently of any visceral disease, as early as the third month of gestation, the uterine structures being in a gorged state merely.

* Mr. Langstaff, in the 12th vol. of the Med. Chir. Trans., has published a case of ascites occurring towards the close of pregnancy and occasioning very great distress, for the relief of which rupture of the membranes was determined upon in preference to tapping. The next day, labour not having ensued, and dissolution being threatened, paracentesis was performed, and twenty five pints of water drawn away. Symptoms of inflammation rendered an active treatment, including depletion both general and local, quite necessary. Labour followed on the fourth day, and the patient entirely recovered. There is an important distinction however, between these cases, which will account for the difference in their results, and justify the practice pursued in each. In the case I have detailed, the dropsy was secondary to organic disease. In Mr. Langstaff's, the effusion depended upon simple inflammatory action, the consequence of pregnancy. After delivery therefore there was no re-accumulation of fluid.

CHAPTER VIII.

ON SYNCOPE IN CONNEXION WITH THE STATE OF THE BRAIN IN ORDINARY DELIVERY, AND WITH HEMORRHAGES IN PARTICULAR.

Hemorrhage is arrested in two ways—by syncope, and tonic contraction;—the former temporary in its effect—the latter permanent. Syncope frequently succeeds delivery, as the consequence of protracted labour or agitation of mind. There also is a form of the attack which usually is associated with a very languid state of the circulation. This condition, commonly unattended with hemorrhage, may often be ascribed to the sudden expulsion of the contents of the womb, and the inefficient application of the bandage.

"It appears to me probable," says Dr. Ramsbotham, "that on the removal of pressure by the sudden emptying of the uterus, the parietes of the abdomen and its contents do not readily accommodate themselves to the change thus induced, and in consequence some unfavorable impression is made upon the brain and nervous system, and thence transferred to the heart and circulation. An analogous event occasionally occurs after a great surgical operation, by which the system has sustained such a shock as under its effects is incompatible with the continuance of life."* In the words of Burns, "Speedy death may also arise from the brain becoming affected in a way similar to that which takes place

* On sudden death immediately after delivery, Med. and Phy. Journal, vol. 32. p. 135,

in puerperal convulsions. If a slight hemorrhage accompany this state, the sinking effect is great, and from the combined causes the patient may die, although there be little loss of blood."

The fatal results spoken of by Ramsbotham happily are of rare occurrence. I know but of a single instance, and in this the patient died almost instantaneously after her delivery. Except that the uterus was large and flaccid, nothing appeared on examination to account for the event.

The attack is in most cases speedily relieved by firm pressure, perfect repose, a low position of the head, the liberal employment of stimulants, especially large doses of sal volatile and perhaps opium, frictions over the cardiac and epigastric regions, and the free admission of cool air. The treatment must be continued "till the first changes in the circulation be effected, and till a mutual accommodation of the several parts within the abdomen has taken place."

A seizure, similar to that first mentioned, may however occur when the uterus has acquired its ordinary firmness; and has sometimes been associated with mental impressions,* an

* The depressing passions exert a baneful influence both as respects hemorrhages occurring soon after delivery, and puerperal disorders in general. This influence applies peculiarly to the case of unmarried women, many of whom from a sense of shame, neglect, and degradation, undergo the keenest distress, accompanied perhaps with apprehensions of personal safety. Supposing the nervous system to withstand the shock of the labour, and re-action to be completely established, yet the patient being more than ordinarily susceptible of those morbid impressions to which every lying-in woman is more or less predisposed, the system offers little resistance to the encroachment of disease. Towards such unfortunate persons the most considerate behaviour should always be observed. It will be well also for the young practitioner to recollect how unable these individuals are, when seized with formidable diseases, to bear active medical treatment, and how unexpectedly life is sometimes cut off.

illustration of which is afforded in the annexed case obligingly furnished me by my friend Mr. Knowles.

"Mrs. S. during her tenth pregnancy, felt an unusual depression of spirits, and had a strong conviction upon her mind that she should not survive her approaching labour,—an opinion which she often expressed with singular confidence to several of her neighbours. Her labour, which was not severe, commenced about ten o'clock at night, and terminated about four o'clock in the morning. She immediately afterwards became faint, although the hemorrhage that followed did not exceed a pint, and was in fact effectually restrained by firm and continued pressure upon the uterus. By the diligent use of stimulants, the circulation was occasionally for a few moments slightly improved. At the end of half an hour, the state of the patient becoming still more alarming, it was proposed to perform the operation of transfusion; but before the arrival of the instrument (which was in less than a quarter of an hour) she had expired. I had previously passed my hand into the uterine cavity, and found the organ tolerably contracted, and containing very little blood."

It is to a very different state of the circulation that we now propose more immediately to allude. Fainting is almost inseparable from large losses of blood; and, since this state of the system may have either a beneficial or an injurious tendency, it becomes us to watch over its effects with much circumspection. The observation of Conquest, that the administration of stimulants is one of the nicest points in obstetric practice, accords with experience; for when stimuli are not absolutely necessary, they directly defeat their intended purpose, since the vessels, under an active circula-

tion, displace the coagula formed at their extremities, and lead to a renewal of the bleeding.

Hewson remarks, "From this circumstance, that the disposition of the blood to coagulate is increased as the animal becomes weaker, we may draw an inference of some use, with regard to the stopping of hemorrhages;"* and he afterwards alludes to the practice of administering stimuli and cordials in floodings generally, as calculated to prevent that languor and faintness which are so favorable to the formation of coagula in the vessels. Hewson's observations receive additional confirmation from the experiments of Thackrah, which prove, that under a state of deliquium the blood is more susceptible of concretion; a circumstance which it appears a priori reasonable to infer. As the formation of a clot at the extremity of a vessel will arrest an hemorrhage, temporarily at any rate, to guard against its displacement until the uterus has acquired an efficient contraction is very desirable. Unless, therefore, under a present and active effusion, the depression of the heart's action threatens danger to life, stimuli should not be administered except with the utmost caution, and such means must be substituted as are calculated to arrest the flooding, without increasing the frequency of the pulse.

In two cases bordering on exhaustion, the administration of brandy was several times successively followed by a return of hemorrhage. Moreover, since it is now established that large discharges of blood are frequently succeeded by undue vascular action, stimuli in slight hemorrhages should altogether be avoided. We should therefore carefully distin-

* Experimental Enquiry, p. 68.

guish between ordinary faintness, and that graver form which passes into asphyxia, our judgment being always regulated not by the blood lost, but by the effects produced.

Useful as fainting may prove in favoring the formation of coagula, prudence requires us to be observant of its duration, and suspicious of its advantage. Although, by diminishing the force of the circulation, it temporarily arrests an hemorrhage, it must be remembered that uterine contraction, upon which the permanent cessation of hemorrhage depends, cannot go on whilst it continues. It is this circumstance which renders a constant state of *faintness* more dangerous than an absolute but transient attack of syncope.

In abortion, when the vessels are small, fainting, unless frequently renewed, can rarely be injurious, and generally is of advantage. A different result may however take place. In an instance of early abortion in which I had the assistance of an eminent practitioner, such was the death-like depression that twice during the night we considered respiration actually to have ceased, nor could we for some time distinguish any pulsation in the superficial arteries. But when the vessels have acquired a large size, the chance of security from the formation of coagula is scarcely equivalent to the risk incurred. With great propriety, therefore, Dr. Dewees enquires, "Who would wait for this forlorn effort of nature when he could command a tampon?"* Beyond the mere possibility of the formation of a clot, the patient has nothing to gain from fainting, but every thing to lose, even life itself; for existence has been known to terminate in consequence in a manner awfully sudden. Burns describes it as "a state too often only the prelude of death."

* Dewees' Compendium, sec. 1059, p. 429.

Even should syncope from great losses of blood, not prove directly fatal, the brain may receive a very serious impression, leading to disorders of the bodily as well as of the mental functions. It is to this enfeebled state of the sensorium, that the vomiting, which so frequently succeeds syncope, is to be ascribed.* These effects of hemorrhage upon the brain are exceedingly striking; for it now appears that confusion of intellect may equally be produced by opposite states of the circulation, —by congestion on the one hand, and depletion on the other. That effects thus analogous do really occur from causes so diametrically opposite, no longer admits of doubt. Denman alludes to "violent and pertinacious head ache, and other nervous complaints which follow profuse hemorrhage;"† an observation previously made by Mauriceau.

"It seems highly probable," says Dr. Abercrombie, "that a certain balance of the circulation of the brain is necessary for the healthy condition of its functions; that they are equally impeded by the interruption which takes place in apoplexy, and the diminished impulse which occurs in syncope, and in many affections of extreme exhaustion; and that there is a remarkable similarity in the symptoms which occur in these opposite conditions."‡

The effects, whether immediate or remote, of large losses

* This sympathy is equally remarkable as respects the changes produced by conception, and diseases of structure. The mere introduction of the speculum vaginæ prior to the excision of the cervix uteri, in a case of cauliflower excrescence, occasioned immediate faintness and urgent vomiting; and after a similar operation, (the excision of a fungoid disease affecting the same structure), although the hemorrhage was inconsiderable, the patient was for two hours bathed in cold perspiration, with a pulse barely perceptible. In a third case of excision, strictly resembling the last, a similar state supervened.

† Introduction to Midwifery, vol. ii. p. 355.

‡ On Diseases of the Brain, 2nd ed. p. 324.

of blood, are amply elucidated in the researches of Dr. Marshall Hall, a work characterized by much originality of thought and philosophic induction. To this subject we shall have occasion again to advert in another part of the work.

Convulsions and paralysis, amaurosis especially, have been known to follow a copious uterine hemorrhage; and this is easily accounted for, since a given momentum of blood is indispensable to the transmission of unimpaired nervous energy. In the same manner fatal cases of convulsions have arisen also from venesection in adults, and from the bleeding of leech bites in children.‡

‡ A large quantity of blood was abstracted from a young woman who had a trifling head ache, though otherwise in perfect health. About five minutes after the operation, she became strongly convulsed, the fits frequently recurring for the space of a month. They were accompanied by a rapid and small pulse, pallid countenance (the lips becoming quite white whenever she attempted to sit up), dry tongue, restlessness, œdema and pain in the left leg, and extreme debility; in short, irritative fever. At the end of the sixth week, having been free from convulsions for a fortnight, she was seized with another fit, which lasted above ten minutes, and terminated in death. On post mortem examination, no disease could be discovered. There appeared rather more fluid in the ventricles, and the brain was whiter than natural. In two other instances I have observed venesection, when performed with a view of inducing syncope, not only produce this state of the system, but also a fit of convulsion so alarming as to excite the most fearful apprehensions of the result. Infants and young children are little capable of sustaining any loss of blood,—especially in an advanced stage of acute disease. Having become acquainted with two fatal cases of convulsions immediately succeeding syncope, from the bleeding of leech-bites, I am now accustomed, when the slightest doubt exists as to the patient's strength, to prevent the escape of blood on the leeches falling off. By this means, the abstraction of an indefinite quantity of blood is prevented. A similar impression may also be produced upon the nervous system from violent purgation. To a boy, four years of age, and in perfect health, was administered an emetic of tartarized antimony, for *supposed* ascarides. Its action on the bowels was excessive, and after great exhaustion, convulsions, and insensibility, for about sixteen hours, death ensued. After a post mortem examination, I submitted in evidence upon the Coroner's inquisition, that the body appeared drained of its blood, the vessels being exsanguineous, and the intestines remarkably white.

I am informed by my friend Mr. Chawner, that a patient of his, who had sustained a very serious hemorrhage after a quick delivery, instantly became blind, and remained in total darkness four days, before she experienced any glimmering of light. Six months elapsed before vision was perfectly restored. Many instances of blindness from protracted suckling are on record.

When the patient is affected with delirium or stupor, the hemorrhage must have impressed the vital powers to a most dangerous extent. The case detailed at the end of this work (in which transfusion was performed), affords a very striking instance of cerebral disturbance from impaired vascular action. The stupor could not have been of a graver character even had blood been effused over the brain.

CHAPTER IX.

ON THE ADMINISTRATION OF OPIUM.

Physiologists are by no means agreed respecting the action of opium, notwithstanding the many scientific investigations which have been pursued from a very early period to the present era.

Two opposite opinions have been entertained as to its operation, whether it acts as a sedative or as a stimulant. As a sedative, its qualities are said by Denman, Barlow, Dewees, and others, to be unfavorable to uterine action; and the inconsistency of prescribing a medicine having a tendency to overcome pain and contraction in an hemorrhage that is to be subdued by contraction alone, has often been the subject of remark. Merriman also objects to the employment of opium in hemorrhages, unless attended with irregular or spasmodic action. If considered a stimulus, the principle of its administration will be obvious.

As the constituent principles of opium are directly opposite in character, viz. narcotine, which is stimulant, and morphine, which is sedative, it becomes difficult to assign to this grand agent, in reference to its action on the human body, a name that shall be free from objection. If it be true that a small dose of opium excites the heart and arteries, and that a large dose produces a contrary effect, we may regard this medicine as possessing the properties both of a stimulant and a sedative, according to

the dose exhibited. In this view, small doses cannot deprive the uterus of its contractility; indeed, in the opinion of several eminent authors, opium, when thus administered, often increases pain and thus accelerates parturition. Leake expresses surprise at this circumstance. Burns distinctly states that by allaying irritability, opium seems to act as a stimulant on the uterine fibres. Again, admitting that a large dose relaxes the muscular system, it must at the same be allowed that its effects upon the animal fibre will be general. The tardy and languid action of the heart and arteries will directly favor the formation of coagula, at the extremities of the uterine vessels, and so far opium, in a large dose, may indirectly arrest an hemorrhage. Under a strong aud frequent action of the vessels, this process of coagulation would certainly be resisted. But, if Haller's* observation be true and applicable to the human body, that opium leaves the force and motion of the heart unimpaired, the above theory cannot be maintained.

Dr. Stewart, in his treatise on uterine hemorrhage, commends the use of opium in unmeasured terms, but denies that it acts either as a stimulus or as a sedative. The principal point he labours to establish is, that opium is usually given in doses too small to be of decided advantage.

This position has been severely animadverted upon. No prudent practitioner could for a moment think of prescribing opium in the doses recommended in this treatise, unless under a most pressing emergency. At the same time it must be allowed, that though pain may be considered necessary for the due contraction of the womb, and though opium in large

† See his Dissertation on the irritable parts of animals.

doses is calculated to suspend pain, yet, under a formidable exhaustion (with which pain is rarely associated), its full exhibition may be very requisite.

Although occasionally opium may be administered with advantage *during* a profuse hemorrhage, its salutary effects are more decidedly manifested when the effusion has ceased, and the system been left in a state of great exhaustion.

My own impression is, that opium, when thus administered in large doses, acts as a cordial; different indeed from every other remedy of this class which we are accustomed to employ. Much will doubtless depend upon the age, habits, and constitution of the patient. In two respects it claims a decided advantage over brandy, the stimulus ordinarily resorted to in hemorrhages. Brandy, by exciting the action of the heart, too frequently displaces the coagula which may have formed at the extremities of the vessels, and thus leads to a renewed effusion. Opium, on the other hand, from its peculiar and direct influence on the brain and nerves, —for there is no time for absorption,—indirectly promotes uterine contractility by sustaining the system when under extreme depression. In such a state also opium remains on the stomach when brandy often is rejected.

The objection against opium, that it will prevent uterine contraction, valid as it may be in other cases, cannot be recognized here—since this medicine is resorted to either when the uterus is incapable of contracting, or when the contractions which have arisen are unaccompanied by the usual re-action of the system.

Murray observes, "Sistitur etiam opio feliciter immodica

ista hemorrhagia et periculosa, quæ partui nonnunquam statim supervenit; sive hæc fiat a residuis placenta portionibus, vel grumis sanguineis post infantem natum; sive contingat post uteri contenta omnia jam exclusa."* Dr. Paris, after speaking of the depression which follows the administration of opium, observes, "Small doses have enkindled excitement and sustained the powers of life, under circumstances of extreme and alarming exhaustion."† In favor of opium, in doses varying from fifty to a hundred drops, according to the urgency of the occasion, we have the testimony of the most celebrated of modern authors, Professor Burns. The following passages are extracted from different parts of his treatise on Midwifery. "When a woman is known to be subject to hemorrhage, we should give her a small dose of laudanum immediately after delivery." "Opiates are of greater service than ordinary stimulants in all cases of uterine hemorrhage after delivery. They are among the safest and best cordials we can employ, and must in every instance be exhibited." Having recommended friction and the application of a bandage, in hemorrhages after delivery, he further observes, "These are aided by the instant exhibition of fifty drops of laudanum." We even find our author advising the administration of this remedy before turning the child in placenta presentation, and on principles totally opposite to those which suggest the propriety of its exhibition under other præternatural deliveries, since a forcible contraction prevails in the one case, and a state of relaxation in the other. Gooch also, in his lectures, advised opium in all extreme cases of hemorrhage; and Professor Hamilton has for many years

* See Murray's Apparatus Medicaminum, vol. ii. p. 338. Numerous authorities on the action of opium are contained in the chapter from which the above passage is quoted.

† Pharmacologia, vol. i. p. 142.

been accustomed to eulogize "*large doses of opium*," in similar states of the system.

But, whatever may be our particular theories on this point, it is undeniable that opium exerts a very salutary influence in hemorrhages. The ratio medendi may be disputed, —the fact itself admits not of controversy. Dr. Young, in his treatise on opium, candidly allows that the opinions which theory had led him previously to form, were frequently contradicted by his actual observation of the effects of this medicine; thus proving that experience is the only safe guide to direct us in its practical application. From personal observation, I regard this medicine as eminently beneficial when the hemorrhage is associated with alarming syncope, great irritability, jactitation, threatened abortion, irregular uterine action, or severe vomiting; or, after it has seriously depressed the sanguiferous and nervous systems. When there is neither vomiting nor restlessness, brandy and ammonia are sometimes preferable to opium; and should re-action not then succeed, transfusion may be performed. In a recent case of convulsions, occasioned by great loss of blood from accidental separation of the placenta, I administered opium with most happy effect, at a time when, from extreme exhaustion, the delivery by turning would probably have proved fatal In a case detailed at the end of the work, it was administered under a high degree of restlessness and jactitation, and in less than an hour after, the patient had become tranquil. In order to secure its effective action, it seems essential to administer it in a large dose — say from sixty drops to two drachms of the tincture, or, from two to five grains of the extract or powder—in which quantities it has proved very successful. Should the œsophagus be paralyzed, it may be injected into the intestines. Four cases of hemorrhage,

treated by large doses of opium, have been reported to me by my friend Mr. Wickenden, a most respectable surgeon in this town. In three cases, half an ounce was administered at a dose; in two of these, the same quantity was repeated in the course of half an hour. In the fourth case, the dose did not exceed two drachms. Mr. W. remarks, "The patients were in the most imminent danger — two of them really appeared to be dying. I feel much pleasure in bearing testimony to the admirable effects which I have witnessed from the exhibition of large doses of laudanum in alarming cases of uterine hemorrhage. Notwithstanding the quantity administered, I have never known the slightest head-ache to supervene." In three of the cases just alluded to, the hemorrhage succeeded ordinary delivery. In the fourth, it followed delivery by turning, under an arm presentation. It must be allowed, that in cases of collapse from a material loss of blood, neither opium nor ordinary stimuli produce their usual action unless administered largely.

It is advisable, even under an improved state of the circulation, that the opium be not suddenly withdrawn, lest collapse should again take place, but continued at more distant intervals, and in diminished doses, until the action of the heart appears to be permanently restored.

The depression occasioned by opium in its *secondary* action, may indeed take place; but, since every thing depends upon the resources of the moment, and since no other medicine equally efficient can be substituted, this circumstance ought not to militate against its administration. We should nevertheless keep a vigilant eye on the system when the usual dose of opium has been exceeded, since con-

gestion of the vessels of the brain* may *possibly* ensue; and the practitioner should therefore on no pretence quit his patient, without leaving a competent person in charge, in order that its effects may be narrowly observed. Should a tardy circulation of the heart, coma, wandering of mind, or convulsive movements, supervene upon its administration, it must be discontinued, and diffusible stimuli and strong coffee substituted; and perhaps the cold affusion should be applied, care being taken at the same time that the extremities are kept warm.

Mr. Waller, in his Elements of Midwifery, recommends a large dose of opium invariably after delivery, by way of equalizing the circulation.† This practice certainly is objectionable. When the placenta has not been hastily extracted, it will generally be unnecessary to administer opium at all; and, whenever it is prescribed, a purgative will in all probability subsequently be required. Very severe after-pains do unquestionably arise (however skilfully the placenta may have been managed), the alleviation of which is a matter of essential importance. Hyoscyamus, in doses of ten or fifteen grains of the extract, or a drachm of the tincture; or opium, in doses of a grain of the powder, or thirty minims of the tincture, may be administered at intervals. Perhaps Battley's solution, in the usual doses, would be preferable, as it is less liable than the other forms of opium to affect the head or constipate

* Although in these cases the nice balance of circulation in the arterial and venous system is no longer preserved, there is sometimes no absolute want of blood in the brain generally. From Dr. Kellie's experiments upon animals bled to death, contained in the Ist vol. of the Med. Chir. Soc. Edin. it appears that whilst the organs of the body were drained of their blood, the superficial vessels of the brain presented their usual appearance. Dr. Abercrombie's interesting "Conjectures in regard to the circulation of the Brain," may be consulted on this point—see his Path. and Pract. Researches, p. 313.

† Elements of Midwifery, p. 115.

the bowels. Simple friction, or frictions of laudanum, may also be employed, but when the uterine sensibility is unusually high a fomentation will answer better. In cases in which opium has failed, a mild aperient has afforded great relief. Dr. Dewees speaks highly of camphor, and I think deservedly.* I have seldom employed this medicine with a view of allaying after-pains; but in a case of mania, doses from a scruple to a drachm, taken for several weeks in succession, induced sleep, when very large doses of opium rather excited wakefulness.

An instance has been mentioned to me in which four successive premature labours were attributed to very violent and painful movements of the fœtus. In such cases, if venesection has failed to afford relief, the employment of opium would unquestionably be proper; for if it produced no direct effect upon the child, it would, (unless labour had actually commenced,) diminish the sensibility of the uterus. Opium may also be useful in exhaustion arising from causes independent of hemorrhage.†

* System of Midwifery, p. 197.

† Some years ago, a Publican of this Town, after a dangerous illness of many weeks duration, was considered as irrecoverable. The disorder arose from an affection of the liver, accompanied with purging and a very obstinate form of vomiting, the stomach having for a long time rejected both food and medicine. Death appeared to be not only inevitable, but near at hand. It was thought advisable to administer solid Opium, but the patient resolutely refused all further medicine. Having made a complaint of the flavour of his wine, my Colleague in attendance offered him a pint of generous wine from his own cellar. An ounce of Laudanum was mixed with a pint of Port, which was directed to be drank at intervals during the night. Our patient swallowed it considerably under the prescribed time. His vomiting at once ceased; he continued progressively to improve, and soon attained a good state of health. One effect of the cordial was provoking a very large flow of urine, probably from the vomiting having ceased. I will merely add, that the patient had been for some weeks gradually sinking, and that when the Opium was thus prescribed, we had not the slightest expectation of finding him alive at our next visit.

CHAPTER X.

ON THE APPLICATION OF COLD.

The power of cold in restraining hemorrhage from the uterus is familiar to all. The ordinary mode of application, however, in a great measure deprives it of the full benefit of its salutary operation. It is most useful in cases of inertia, and expansion of the uterine cavity; and so powerful is its action, when applied through the capillaries of the skin, as to produce a contraction at once instantaneous and perhaps permanent. To obtain this effect, a fine sheet or large towel should be soaked in cold water, not affected by the temperature of the room, and be laid wet over the hypogastrium. It may also be applied to the loins. We should guard the bed by means of doubled sheets, and napkins properly arranged; but this consideration is comparatively immaterial, the present safety of the patient being our great object. Ice in solution, as advised by Levret, when it can be procured, as also solutions of alum, are sometimes preferable to plain water. Capuron recommends a solution of carbonate of ammonia, or a solution of ice and muriate of soda.* This sensibly and speedily diminishes the force and rapidity of the circulation. To secure the full effect of cold, two points should be kept in view, viz. to apply it both *frequently* and *suddenly*.§ Much depends upon the cold

* Cours D'Accouchemens, p. 290. 4th edit.

§ In two instances, one of which occurred in my own practice, the sudden application of cold occasioned the immediate ascent of a strangulated Hernia, after the operation had been determined upon.

being frequently renewed. I have repeatedly found the uterus attain a degree of tenseness at the moment of the application, yet immediately become soft and expanded upon the cold being withdrawn, and this for a considerable number of times. Again, pouring the water upon the abdomen from a given height produces a very marked effect. The shock and the chill both contribute to constringe the muscular fibre, and consequently the bleeding vessels. So important did this principle appear to Dr. Gooch, that he remarks, "Cold applied with a shock, is a more powerful means of producing contraction of the uterus than a greater degree of cold without the shock."* In less severe cases of flooding, a bladder half filled with cold water, or pounded ice, may be placed over the pubes.‡ But if the hemorrhage has ceased, and the patient labours under exhaustion, the cold should not be persisted in, being calculated to reduce the vital energies still lower: for, though cold acts as a stimulus at the first moment of its application, when long continued it operates as a sedative, and the depressing effects may perhaps be carried too far. When the pulse, therefore, grows very small, and the capillary circulation becomes generally feeble, the cold must either be wholly discontinued, at least for a time, or applied in a modified form. In cases of collapse, it may even be desirable by way of equalizing the circulation to apply bladders of hot water to the cardiac and epigastric regions, care being taken that the extremities also are kept warm. When the evolution of animal heat is much below the natural standard, and the pulse very feeble, these precau-

* Gooch on diseases of Women, p. 351.

‡ It has been suggested, from the well known sympathy between the mammary and uterine systems, to apply cold to the breasts. Under much depression this would be most dangerous, and almost futile as respects the Uterus under any circumstances.

tions should by no means be neglected. The temperature of the atmosphere must also be taken into account.

I have observed the most active contraction immediately result from the injection of cold water into the uterus (iced water when it can be obtained) during an hemorrhage attended with a flaccid and inert state of the organ, and in cases where its external application had failed to produce any effect. If the hemorrhage has ceased, it will be imprudent to inject any liquid whatever into the uterine cavity, however uncontracted the organ may be, lest coagula should be displaced and the effusion renewed. Cold injections of alum have been most beneficially employed in protracted hemorrhage. It is right the patient should understand that the alum has a tendency to coagulate the blood, or she may look upon it in an unfavorable point of view. When contraction follows the employment of cold injections, it follows speedily; and in order that the liquid may be retained some moments in the uterine cavity, the hips must be elevated to prevent its immediate return.

The cold may also be administered by the mouth. A case is related by Mr. Evans† of a woman who had been the subject of hemorrhage, followed by a state of faintness of twelve hours duration, and a tedious recovery, after each of nine successive deliveries. In the tenth labour, as soon as the head was born, Mr. Evans prescribed a tumbler of cold water, in which ice was dissolved. The treatment appears to

* For this purpose, a syringe, or gum elastic bottle, capable of containing six ounces, may be employed. The instrument should have a long tube appended to it, the point of which must be conveyed beyond the os internum, and the liquid propelled with an impetus sufficient to reach the bleeding vessels at the fundus of the organ.

† See Lancet.

have been successful. The plan was recommended many years ago; and under a high degree of vascular excitement iced water doubtless may be drank with advantage.

Cold water may also be injected into the intestines, in conformity with Hamilton's directions. In protracted hemorrhage this proceeding has been attended with marked benefit.

A Mixture of snow and salt, in the proportion of two parts of the former and one of the latter, will produce a degree of cold 32.° below Zero, and by combining two parts of snow, or finely pounded ice, with three of crystallized muriate of lime, a still greater intensity of cold will be obtained. In a forcible state of the circulation, these means may be used externally with great advantage. But a very high degree of cold cannot safely be applied to the skin more than a few minutes at a time. For tables of frigorific mixtures, see Turner's Chemistry, p. 56, 2nd edition.

CHAPTER XI.

ON UTERINE CONTRACTILITY, AND ITS INFLUENCE IN ARRESTING HEMORRHAGE.

Uterine contraction generally implies a function performed by means of muscular fibre. In reference to the living body, contractility is considered by a majority of anatomists and physiologists, as invariably indicating muscular structure; —others, however, deny the necessity of muscular structure to its existence, referring it to irritability alone, particularly Blumenbach and Ramsbotham, the latter of whom regards the nature of uterine contraction as altogether peculiar or sui generis. It is said, that muscular fibres cannot be recognized in the uterus, and that it bears no analogy to the other hollow muscles, as the heart or bladder. Its muscularity is however maintained by Malpighi, Ruysch, Vesalius, and others. We are informed also by Dewees, Hunter, and Bell, that the muscular structure is exceedingly distinct; and Dr. Blundell asserts, that in the rabbit the uterine fibres are as red as beef, and very obvious in the mammifera in general.

In addition to the circular and oblique fibres at the inner surface of the fundus, Bell describes a layer of fibres covering the upper segment of the uterus; and also states, that towards the fundus the circular fibres prevail; that towards the orifice the longitudinal are most apparent; and that on the whole the most common course of the fibres is from the fundus towards the orifice. In the unimpregnated state of the organ, its

muscularity is very obscure, though clearly defined under the circumstances of advanced pregnancy. I have in my collection a specimen of lacerated uterus, in which a structure, intimately resembling muscular fibre, is very distinctly discernible. The contractile properties of the uterus differ widely from those belonging to elasticity, and there is little reason to doubt that fibrin enters into its composition, though in a degree inferior to that of the ordinary muscles of the body.

With respect to the action of the uterus, it may be remarked generally, that not only is there an evident distinction, both in structure and function, between the voluntary and involuntary muscles, but also between the involuntary themselves, when compared with each other. We may instance the iris, the heart, the arteries, the intestines, the bladder, and I may add this organ itself, the uterus. The wisdom displayed in its structure, when viewed in reference to its adaptation to the designs of nature, each respective part admirably accomplishing its own peculiar action and office, has excited admiration in every age. The organ so far performs the muscular office, like the bladder for instance, that it first admits of distension, and secondly expels its contents chiefly by means of the circular muscles of the fundus, which is very perceptible to the operator in a case of difficult turning. It is reported that the uterus has expelled the fœtus after the mother's death. Harvey adduces many instances of this kind, but the most remarkable detail will be found in the Medical Repository.* If this account is true, it furnishes additional evidence that the uterus is muscular.

* Vol 8 page 353, and Vol. 9. p 8. Dewees refers us also to Denman, Baudeloque, Leroux, Kok.

It may be asked, is the uterus susceptible of a spontaneous expulsive effort post mort.? or, if limited to the artificial stimulus of galvanism, will the excitement thus applied prevail over inanimate structure when not furnished with muscle as well as nerve? and in the body of an animal opened directly after being killed, the animal having previously been in full health, does the uterus partake of those quakings and tremors which pervade the fibres both of the voluntary and involuntary muscles? I presume this is the case, since Bell and others speak of the vermicular motion of the uterus, as seen in experiments upon brutes. These remarks may throw some light on the question in dispute. Friction, as well as the operation of peculiar stimuli, the ergot of rye for example, produces upon the uterus effects peculiar to structures which are decidedly muscular. At all events, it is clear that the contraction of the human uterus is as powerful as muscular structure can provide for, answering the grandest purposes of the economy of nature. In this point of view then we propose to consider it.

Hemorrhage is arrested, in the practice of surgery, by the retraction of the arteries and the partial contraction of their extremities, aided by the formation of a clot. A subsequent effusion of lymph permanently closes the cut extremities. In hemorrhage of the uterus, nature pursues a very different course. That the uterine arteries possess contractility in common with the other arteries, cannot be questioned; though, from the peculiarity of the tissue in which they are enveloped, they may not be able to exert it with the same effect. As Dr. Dewees remarks, "The uterine vessels have less freedom than the arteries in the other parts of the body, by being more closely tied by their connecting media." When we consider the active circulation both in the arteries

and veins of the gravid uterus, the capacity of the vessels, their number, and their situation—embedded in the fibres of a loose and yielding structure—we at once understand how it is, that the vessels opening on its inner surface can be effectually constringed only by muscular contraction, and that so long as the fibres remain relaxed, there can be no material check against the occurrence of hemorrhage. For though the tortuosity of the arteries is calculated to retard the current of blood, the comparatively straight course of the veins (which are unprovided with valves), and their free inosculations, would directly accelerate it. As many of the vessels in their calibre are equal to the barrel of a goose quill, an immense quantity of blood may be poured out in a very short space of time. The muscular pressure is so powerfully exerted, as effectually to close their extremities. The other means of restraining hemorrhage, namely, the formation of coagula and slight contraction of the vessels, are subordinate to muscular contraction. The coagula sometimes extend a considerable distance within the tubes. This is the ordinary process of nature; and in the same proportion as the uterine fibres shorten, do the vessels sustain a corresponding pressure.* The period of closure will vary in different cases from a few days to a few weeks. In treating upon the constriction of the vessels by uterine contraction, Burns thus expresses himself, "It is certain that this contraction is not strong, and that the circulation goes on freely in the vessels after delivery, and their orifices are at least as large as those which bleed freely in wounds and operations."† It might appear strictly consonant with other structures, to expect that adhesive inflammation would form at the extremity of the

* For an account of the muscularity of the uterus, and the manner in which hemorrhage is influenced by the active or passive state of its fibres, see Mr. Bell's paper in Vol. iv. Med. Chir. Trans.

† Principles of Midwifery, 7th ed. p. 471.

the vessels, and furnish an additional security against hemorrhage. This, however, has not been established as a general law, and since we know that hemorrhage may prove fatal a month after delivery, it may rather be inferred that this action is rarely applicable to the uterine system. The drainings also, to which some persons are subject for weeks after an ordinary delivery, discountenance the opinion. But, although uterine contraction renders the vessels for the most part impervious, I cannot suppose that oozing can generally be prevented unless lymph also be secreted. That this process is occasionally so perfect as hermetically to close the vessels, may be presumed from the fact, that the lochial discharge has been known to cease altogether a few hours after delivery, so that no degree of soil has been observed on the napkins. Such cases, it must be admitted, occur very rarely. The excess of lymph then, in the circulation of pregnant women, appears to be intended not only to attach the ovum to the uterus, but also to arrest hemorrhage; *directly*, by rendering the blood more coagulable; *indirectly*, by its influence in sealing the ends of the uterine vessels. The importance of acting upon these principles in the treatment of floodings must be self evident. Adhesive inflammation, however, though a common process, is not essential to the closure of any artery of the body; contraction alone may effect it. The vessels which open upon the maternal surface of the placenta are said to undergo a total obliteration upon the shrinking of the uterus after delivery; so that a new formation must accompany each succeeding conception: but since women who have borne many children are very prone to hemorrhages, it may reasonably be inferred, that in such persons the vessels are larger and more numerous in the subsequent than in the first accouchement.

CHAPTER XII.

ON THE CIRCULATION IN THE OVUM.

Rightly to appreciate the nature of hemorrhage, the connexion subsisting between the ovum and uterus must be as correctly understood as the recognized laws of its physiology will permit. My object is simply to give a brief account of the subject.

The human placenta, which is formed between the layers of the decidua, is a large fleshy mass, spongy, easily lacerable, and composed chiefly of a congeries of vessels having two distinct origins and innumerable capillary terminations. These vessels ramify in a cellular web, which gradually becomes more filamentous as pregnancy advances. We speak of the placenta then as of double derivation, and consisting of two distinct parts; the maternal or cellular, formed by the ramifications of the uterine vessels into the decidua, and charged with the blood of the mother; and the fœtal, formed by means of the shaggy points of the chorion and consisting ultimately of the ramifications of the umbilical vessels, and charged with the blood of the child. The mass has a lobulated form. The lobes, which are very distinct at an early period of its formation, become united in one single body. Each lobe, or the part which corresponds to it when thus united, has its own proper and distinct vessels, which are said not to anastomose with the vessels of the other lobes —the extreme artery and the vein appearing, on microscopic examination, inclosed in the same cellular sheath. The

uterine arteries and veins, however, freely communicate with each other in the cellular part of the placenta; and the same may be said of the umbilical vessels in the fœtal, whatever doubt there may be as to a joint communication between the vessels of the one part of the mass with those of the other. The point to be established with reference to the subject of hemorrhage, is the precise nature of the placental circulation; a very difficult enquiry, since the experiments which have been made with a view of determining the point are far from conclusive. The question at issue is simply this.—Do the vessels which supply the two portions of the placenta communicate by continuous tubes? or do the arteries terminate by open mouths in the cells, and after the blood has been thus deposited loosely or by infiltration, do the returning veins arise by distinct orifices, the cell intervening between each artery and vein? This is the explanation commonly received—an explanation somewhat difficult to comprehend. What is the result of injection? On injecting the uterine arteries, the liquid passes into the uterine veins and the maternal parenchyma of the mass, or is extravasated between the lobes, but no part of the injection passes into the umbilical vessels. Again, injections passed into the umbilical vessels will not reach the uterine. From these experiments it would appear, that between these parts there is no communication cognisable to the eye, or permeable by common injection. According to Adelon, however, a continuous vascular communication has been proved, from the fact that Chaussier, by injecting the umbilical vein in the dead subject with mercury, and Beclard with oil, injected not only the whole placental mass, but even the tissue of the uterus and the uterine veins. It is, as Adelon observes, difficult to conceive how the injection, if spread out within the placenta, could penetrate the two sets of vessels. The experiments also of Dr.

Williams shew that the utero-fœtal circulation is carried on by means of uninterrupted vessels. Having injected with coloured oil the ventral aorta of a bitch in pup, he strangled the animal, and on opening the body discovered the oil not only in the umbilical vessels of the young, but also in the body generally. In like manner, camphor, when injected into the maternal vessels, is found to impregnate the fœtal blood. Majendie observes, "After having made this injection on a bitch in pup, I extracted a fœtus from the uterus at the end of three or four minutes. Its blood had no smell of camphor, but the blood of a second fœtus, extracted after a quarter of an hour, had a very perceptible smell of camphor, and this was the case with the other fœtuses. Hence, notwithstanding the want of a direct anastomosis between the vessels of the uterus and those of the placenta, it is impossible to doubt that the blood of the mother, or some of its elements, do pass readily to the fœtus. It is probably deposited by the uterine vessels on the surface or within the tissue of the placenta, and is absorbed by the radicles of the umbilical vein. It is much more difficult to know if the blood of the fœtus returns to the mother."* Adelon,† in speaking of two distinct organisms in this circulation, suggests the idea of a double exudation and a double absorption; that is, the uterus is supposed to exude on its surface, or in the parenchyma of the uterine part of the placenta, a matter which the umbilical vessels of the fœtal part of the placenta absorb; and in like manner, the umbilical arteries of the fœtal placenta are supposed to exude a matter which the uterine veins of the uterine placenta absorb.

An analogy between the capillary functions of animated

* Physiologie, tome ii. 444.
† Physiologie de L'Homme, tome iv. p. 396.

nature and those of the vegetable creation was long since traced by Leake, who says, "If we may compare vegetables with animals, it seems most likely, that the child in the womb is at first nourished by the same absorbent power as roots in the earth; or like parasitick plants, which draw their nourishment from the body into which they are inserted."*

The fact of the red particles of the blood not passing from the uterus to the infant, is no contradiction to the continuity of the vessels; for, besides the result of Majendie's experiments, the colouring matter of madder, when mixed with the aliment taken by the mother, has been found to tinge the bones of the fœtus.

Several valid objections have been advanced against the theory of a *directly* continuous circulation. The chief argument is grounded upon the absence of isochronism or synchronism between the pulse of the fœtus and that of the mother. Whatever view may be taken as to the continuity of the circulation, the current necessarily is arrested, and undergoes those changes which invest it with its peculiar character. A connexion, and a most intimate one, whether demonstrable or not, there must needs be between the two respective parts of the placenta, or the child could not be nourished, (notwithstanding Meckel's doctrine), nor could infectious and exanthematous diseases be communicated from parent to offspring. Harvey described the placenta as performing the office of a gland; but whether some new matter be secreted, or whether the process be altogether one of absorption, it is certain that the materials of the fœtal blood can be renewed only from the

* See Practical Observations on Uterine Hemorrhage, p. 248. Leake appears to have borrowed the comparison from Parsons' "Analogy between the Propagation of Animals and Vegetables."

blood of the parent, and whenever this blood, at least in any material quantity, is diverted from the placenta, the child generally perishes.

The supposed similarity of this change to the pulmonary function in the oxygenation of the blood is very doubtful, since the fœtal blood contains but little carbon, and is nearly of the same colour in the arteries and veins. On the whole, I cordially enter into the view propounded by Dr. Blundell, that the communication is by exceedingly minute orifices or tubes, capable of transmitting the more subtle parts of the blood, for instance the serum and the coagulable lymph, to the exclusion of the red particles. This partial independence of life is doubtless designed to answer some wise purpose of the animal economy — perhaps to obviate impressions, both physical and mental, calculated either to impair the regular growth of the body, or to destroy life. Sir E. Home's alleged discovery of nerves in the placenta appears to be mere imagination.* It is sufficient for us to know, that flooding will generally be commensurate with the age of pregnancy, and the extent of placental detachment. The very large size of the uterine vessels at the close of pregnancy, and their free communications, are fully adequate, whether the

* Conformably with the researches of modern physiology, malformations of the fœtus are now referred to an irregular or defective developement, commencing from an early period of its growth. The influence of imagination, or a supposed nervous communication, is still, however, maintained by several most eminent practitioners. Those cases alone are entitled to consideration, in which it can be clearly shewn that the impression of a defined malformation existing for a considerable period *before* delivery has been verified by the event. A very remarkable instance of this kind has recently occurred in this town. An interesting paper on these congenital defects, by the late Mr. Hey, will be found in the first number of the North of England Medical and Surgical Journal, page 31.

blood be deposited loosely in the placental cells or enclosed within tubes, to account for hemorrhages of the most dangerous character, and their influence both upon parent and child.

CHAPTER XIII.

ON THE INFLUENCE OF THE SECALE CORNUTUM OVER UTERINE CONTRACTILITY, WITH REMARKS ON THE GENERAL PRINCIPLES OF ITS ADMINISTRATION.

The Ergot of Rye, long celebrated in Germany, Italy, France, and America, as a medicine calculated to accelerate parturition, has been known comparatively but a short period in our own country; and although it has now for some years been extensively employed, it yet holds no place in our pharmacopœias. Dr. Neale, in a condensation of Villeneuve's work, has favored us with a treatise on the subject. But perhaps the strongest advocate for this medicine is Mr. Michell.* The eulogiums, however, which this author bestows upon the properties of the ergot, are most extraordinary, and directly at variance with general observation. The statements, for instance, which authorise its administration whilst the os uteri is undilated, and the opinion that it will supersede the forceps, and, except in a few instances, obstetric aid also, need no serious refutation. But, on the other hand, to denounce the ergot, and deny its efficacy, without an experimental acquaintance with its action, is not only most unphilosophical, but altogether inconsistent with patient research.†

* On Difficult Parturition, and on the use of the Ergot of Rye.

† See Gooch's Practical Compendium of Midwifery, by Skinner, page 184.

The action of the ergot upon the uterus is different from that of any other stimulant; and in one respect it claims an advantage, that it is not succeeded by inertia. Except that it now and then produces sickness, this medicine has been said not to affect any other organ but the uterus.*

The numerous instances on record of its efficacy in arresting floodings invest it with a high degree of importance, as occasionally exerting a specific action over uterine contractility. In hemorrhages connected with labour, both before and after delivery, the ergot has been found to produce beneficial effects. It is recommended likewise in abortion, and in excessive discharges from the unimpregnated organ, both of the menstrual and leucorrhæal kind, and in those which depend upon the presence of polypi. With respect to its action, physiologically considered, two views have been taken—first, that it cannot *originate* uterine contraction, being limited to the increase or renewal of pains previously established, but which have become feeble or dormant; and secondly, that it is really capable of *originating* contraction, both in the impregnated and unimpregnated state. If this be true, which I cannot affirm, it is obvious to what immoral purposes it may be applied.

My own remarks on its value in accidental or other uterine hemorrhages, shall be as brief as possible. The ergot often induces violent uterine action. The degree of violence may be inferred from the fact, that a spasmodic disease is described by Tissot as resulting from the use of bread containing ergotted rye. I have generally found its effects uncertain; and, exclu-

* If this be true, what are we to say of its alleged property of arresting Epistaxis, Hœmatemis, Hœmoptysis, &c.?

sive of its frequent adulteration, as the ergot is a morbid change of the grain of the rye,* its properties vary with the variations of the season. This uncertainty cannot be altogether ascribed to the inefficacy of the diseased grain; since the same specimen has produced a material effect upon one individual, yet not the slightest effect upon another, even when exhibited in the same doses and form. In many instances it either produces no effect at all, or is too transient in its operation to promote the expulsion of the child. In such cases, the dose may be renewed on the action subsiding, and by rousing the dormant energies when the pains are either defective or totally suspended, it occasionally exerts a very beneficial influence.

It sometimes causes *extreme* suffering. Dewees indeed states that the ergot does not occasion great pain. My experience upon the point is the reverse of this. So distressing did its operation prove in three instances, that in subsequent labours the patients resolutely refused it. Its full action generally arises speedily after its administration, and is manifested, first, by the womb on external examination becoming tense and firm, and secondly, by the supervention of pains at very short intervals. To this, however, an exception is to be made. The ergot every now and then defeats itself, in consequence of the action induced, though not strong, being without any *perfect* intermission; the frequency of the contractions seem to prevent their attaining that degree of force which is requisite for the expulsion of the child. That the

* Mr. Battley suggests from the result of his late experiments, that the great change in the grain consists principally in the conversion of the starchy into resinous matter and a substance resembling animal matter, and that this is to be ascribed to the economy of the plant having been infected by the presence of some insect or its larvœ, an opinion by no means original. It appears to be a species of fungus.

uterine action is really to be attributed to the operation of this medicine, may be inferred from the complete change which occurs in the character of the pains very soon after its first exhibition. Even under regular and strong paroxysms, the patient, in some instances, does not in the interval obtain perfect freedom from pain, probably from the tonic contraction not entirely ceasing. It is observed by Dr. Cusack, in the 5th volume of the Dublin Hospital Reports, that in three instances where it was employed in half drachm doses, substance as well as infusion being administered, symptoms of an apoplectic nature supervened, such as a diminution in the frequency of the pulse, the beats averaging from fifteen to thirty in a minute, stupor, epistaxis, &c. Though the pulse is said to become under its administration rather slower than ordinary, I do not understand that the symptoms referred to by Dr. Cusack have in other instances been found to occur. Professor Burns, under the impression that morphia forms one of its constituent properties, regards the principle of its action as analogous to that of opium: to this, however, an exception may fairly be taken, since opium will directly arrest its action. Moreover it is proved by the analysis of Vauquelin, and by the more recent analysis of Maas, that morphia is not a component part of the ergot of rye.

Certain rules must always be kept in mind when the ergot is administered. The pelvis must be well formed, and the uterus and external parts in a dilated and relaxed state; for, if otherwise, the induction of the strong and unremitting contractions which usually follow its full specific action, might risk the integrity of the womb, or endanger the life of the child,* which is by no means surprising, since by many

* It has, I believe, been stated as matter of observation in America, that since the general use of ergot, still-born children have been

practitioners it is most injudiciously prescribed, without any reference to the state of the os tincœ, whether rigid and undilated, or soft and having undergone, or nearly so, its full dilatation. I am informed by a surgeon of extensive practice in this neighbourhood, that to his knowledge several instances of ruptured uteri have really occurred under its violent action. Not only should the uterus be dilated to the extent now specified, (and many hours of acute suffering may be occupied in its accomplishment), but it should have acquired also the *dilatability* necessary to the completion of the process. Young practitioners are liable to deception on this point—the extreme edge of the disc may be very thin, whilst the greater part of the os uteri shall be thick and unyielding. If, in such a state, the specific effect of the ergot were obtained, the advantages of this forcible dilatation would be more than counterbalanced by the distress, and the continued *forcing* sensation, which would almost certainly result.

Additional circumspection should be exercised when the ergot is administered in a first labour. Under a state of plethora, spasm, undue mechanical resistance, excessive

unusually frequent. This effect may probably be attributable to its improper exhibition. If administered under very great resistance, the continued and forcible pressure which the uterine contractions would exert upon the child, might deprive it of life as effectually as in cases of interrupted circulation from impaction or the long continued application of the forceps. Possibly also, the violent operation of the ergot might lead to a premature detachment of the placenta, partially or wholly, and in this manner deprive the infant of life. For example, the ergot is exhibited in consequence of defective pains. A very violent contraction speedily arises. This is attended with a moderate hemorrhage, and the child and placenta are expelled simultaneously—a case far from imaginary, and whilst it confirms the opinion here expressed, fully establishes the active properties of the ergot. Professor Burns, who doubts whether its action separates the placenta before the birth of the child, acknowledges the fact of children being frequently still born after its administration.

uterine sensibility, or when turning is likely to arise (unless in cases of hemorrhage), this remedy will be quite inadmissible. Again, when the placenta is retained either by spasm or morbid adhesion, the ergot will decidedly be improper. It is applicable to states of inertia *only*. To ensure its effects as far as possible, it is very material to administer it in a fresh state, and when the stomach is empty. It may be exhibited in the form of tincture,* infusion, or powder; or it may be used as a lavement. In the process of decoction, the active property of the ergot in some measure escapes. Milk added to preparations of the ergot is said to prove an antidote to its violent effects; but if the ergot be proper, what necessity is there for an antidote? especially since its action, when too violent, may be immediately controlled by opium. Perhaps it might be administered with advantage in placenta presentation, directly before the hand is conveyed into the uterus, in order to induce that efficient and permanent contraction which is essential to the patient's security. In ordinary turning, a high degree of contraction is a serious obstacle; but as these peculiar cases of delivery are often accompanied by a dangerous depression of the vital energies, a powerful uterine contraction, that shall be exerted immediately the turning is completed, is most earnestly to be desired. I submit this as a mere conjecture, not having as yet formed an experimental acquaintance with the subject. Perhaps in any case of turning, or instrumental delivery, attended with a deficient uterine action, it may be

* R. Secalis Cornuti unciam unam, Aq. fervent. uncias duas, macera per horas viginti quatuor, tunc adde Spir. Rect. uncias duas. Dosis, drachma una.

R. Secalis Cornuti drachmas duas, Aq. fervent. uncias sex, macera per horam unam, sumat ægrota hujus infusi tertiam partem omni quadrante hora, si opus sit.

R. Pulv. Sec. Cornut. scrup. vel drach. dimid.

The ergot should be kept in a close stopper bottle, in a dry and cool place.

prudent to exhibit the ergot, in order that the system may be influenced, if possible, before the operation is undertaken. The risk, as well as the great difficulty of extracting a child, when unaided by the proper contraction of the organ, (unless the vital powers be exceedingly depressed, and the relaxation universal), can be appreciated by the experienced only.

In several cases of predisposition to hemorrhage after delivery, it has been observed that the patient escaped flooding when the ergot had been administered during labour. Under this impression it has been proposed to administer it, with a view of aiding the separation of the placenta, when attended with hemorrhage—probably in cases of this description it may be useful. In hemorrhages arising after delivery, and in cases of retained placenta in abortions of four or five months, the ergot has proved of decided efficacy. Contradictory as it may appear, there is some reason to believe that when exhibited prior to the delivery of the child, in protracted but otherwise ordinary labours, the ergot may, in one respect, favor retention of the secundines. Several practitioners with whom I have conversed upon the subject, have noticed this result to succeed the full action of this medicine. Three gentlemen remarked, that in their practice, when the placenta (after its exhibition), did not immediately follow the birth of the child, its undue retention was the consequence; a retention which in several instances called for the administration of opium, and which therefore was most likely dependent upon spasm. These opinions, however, are directly opposed to the experience of others. A practitioner of extensive opportunities in this town, informs me, that he has prescribed the ergot not less than 200 times without meeting with a single case of retained placenta which could fairly be assigned to its operation. Many instances are indeed recorded of its efficacy

in aiding the expulsion of the placenta under a long retention. From this it would appear, that the effects above alluded to were merely incidental. That the ergot *may* produce these effects is clearly to be inferred from the following contrast. In the natural separation of the placenta, the process is gradual. A temporary respite is obtained on the birth of the infant; the pains are then feebly renewed with long intervals, but progressively increase in strength with shorter intervals, until the contractions and corrugations of the womb squeeze the placenta from its surface. But under the *full action* of the ergot, administered previous to the birth of the child, pain, violent in degree and nearly without intermission, almost instantly succeeds the delivery. The womb, being thus prematurely excited, either closes upon the placenta in a globular form, before time has admitted of its detachment, or, if separation has taken place, whether wholly or in part, it may still be detained in utero by a spasmodic contraction of some portion of its structure, anterior to the fundus, probably the inferior part of the cervix, or the os internum. Its strong action may remain even after the womb has been emptied of its contents. After its administration in a first labour, the patient continued to have such forcible and unremitting bearing down pains subsequent to the expulsion of the placenta, that the practitioner was obliged to resort to opium to subdue them. The uterus has under its action been forced as low as the os externum.

As to the practical deductions from the foregoing remarks, I would observe, that additional experience is wanting to confirm the utility of the ergot in uterine hemorrhage: implicit reliance cannot be placed upon it. At present, therefore, it must in this respect be regarded as of doubtful efficacy. The evidence in its favor, as being calculated to promote

uterine contraction under every possible circumstance, though multiplied in extent, establishes no definite principle on which the practitioner may confidently repose. It should be regarded only as an auxiliary, for although it is sometimes efficient in producing the full tonic effect, and thus arresting flooding, it frequently fails, either wholly or partially.

See the different volumes of the Lancet, Medical Gazette, and other periodicals, for numerous communications respecting the Ergot of Rye.

CHAPTER XIV.

ON ABORTION, BOTH UNDER THE ORDINARY AND THE DISEASED STATE OF THE OVUM.

By the term abortion, is understood the detachment and expulsion of the ovum, at any period before the sixth month of utero-gestation. This interruption of the natural process of gestation is exceedingly common. The frequency of the event invests it with a high degree of importance, since the hopes of a family are thus frustrated, and the health of the individual seriously impaired. Some persons recover after a tedious lapse of time, whilst others never attain perfect restoration. Nervous and hypochondriacal affections, too, are frequently acquired, which continue for years.

The mode by which the ovum acquires a connexion with the uterus, must be carefully studied before the process of abortion can be correctly understood. It is not, however, my object to enter into a particular detail. I need only observe, that after conception, and before the vesicle has passed through the fallopian tube, the lining membrane of the uterus, (except the neck), secretes a soft, thick, and pulpy substance or coagulable lymph, composed chiefly of vessels, and divisible into two layers, termed the decidua vera, or the decidua uteri. This membrane is formed in all cases, although the ovum may never reach its natural destination. There is another membrane, the decidua reflexa, so termed in consequence of a part of the decidua vera being reflected over

the ovum, as the pericardium is over the heart. This membrane, as a distinct body, is peculiar to the early weeks of gestation; by the fourth month it no longer presents the appearance of a distinct membrane. The amnios is the internal membrane, secreting the fluid which defends the embryo, and in which it is suspended by means of the umbilical chord. The external membrane of the ovum is termed the chorion. This membrane has a very different appearance at different periods of pregnancy. In the first few weeks, its whole outer surface presents a congeries of very delicate flocky projections (the capillaries of the umbilical arteries and vein), which extend over a surface relatively smaller as gestation advances. About the second month, the floating extremities of the vessels become united with the decidua; at this point of union the vascular part of the placenta is elaborated. These vessels do not reach to the outer surface of the placenta. In the latter months of pregnancy, the chorion becomes smooth and semitransparent. In a very young ovum, we find no traces of a placenta. This mass consists, as already observed, of two parts, the fœtal and the maternal. The production of the fœtal part we have just described. The maternal or uterine part is formed by numerous small vessels passing from the lining membrane of the uterus into the decidua,* for the elaboration of the cellular or parenchymatous structure. "The uterine part is seen shooting out into innumerable floating processes and rugæ, with the most irregular and most minutely subdivided cavities between them that can be con-

* Dr. Lauth considers these vessels to be lymphatics, since they cannot be injected either by those of the placenta or by those of the decidua. It has never been satisfactorily proved that lymphatics exist in the placenta. Vide Repertoire D'Anatomie et de Physiologie Pathologiques.

ceived."* They pervade the placenta as deep as the chorion. It is evident then, that the placenta is contained within the laminæ of the decidua, which membrane indeed may be said to consist ultimately of vessels, and cellular web. From this peculiarity of connexion, by the vessels passing from the uterus to the decidua on the one hand, and the fine but innumerable vessels passing from the chorion to the decidua on the other, it must be evident that when a separation takes place between these parts, hemorrhage will result. Great variety, however, is observable in the manner in which the ovum is cast off, as also in the time occupied in the process. The amount of hemorrhage, moreover, by no means corresponds uniformly to the period of pregnancy, since much will depend upon the state of the general system.

In enquiring into the causes of abortion, which will not, however, always admit of a satisfactory explanation, I beg to be understood as referring here not to abortions which arise from violent exercise, external impressions, drastic purgatives, or any accidental cause, but to those which arise from causes strictly constitutional or habitual. I am aware that whatever stimulates the muscular fibre, as for example mechanical injuries, may directly produce expulsion; as may also circumstances which prevent the developement of the fœtus, syphilis for example, and imperfections of the ovum, dysmenorrhœa, or whatever affects the developement of the uterus itself or its appendages: but these are to be regarded as extraordinary, not as ordinary causes of abortion. Any circumstances which disturb or interrupt the utero-placental circulation may be assigned as remote causes. The predisposing causes

* Hunter's Anat. Descrip. of the Human Gravid Uterus, p. 43.

of abortion may be many, such as passions of the mind, irritation in neighbouring organs, or general plethora. But how do these causes act? Dr. Dewees refers this occurrence wholly to contraction. This rationale is by no means conclusive; for though contraction is the *proximate* cause of abortion, the contraction itself must of necessity be referrible to some source of excitement. Abortion has also been ascribed to habit alone: this again is but a secondary cause. From repeated abortion, the uterus may at length acquire the habit of contracting under a certain degree of distension, in the same manner as the stomach, bowels, or bladder, may by habit expel their contents so frequently as to be in opposition to the ordinary laws of nature. To refer abortion to an absolute inability in the uterus to bear distension, cannot, abstractedly considered, be true; since, if the period at which the miscarriage has usually occurred is once past, a far greater and increasing distension is not found incompatible with utero-gestation; such persons not being more liable to premature labours than other individuals. Vaguely to attribute abortion to weakness alone, is contrary to experience and philosophical induction; or, how should gestation be prolonged to the ninth month, in persons so reduced by disease as to expire immediately after delivery.* Denman maintains that weakness of habit is seldom a cause of abortion. Burns' peculiar theory, that when the action of any part is increased, the energies of the other parts must be proportionably diminished, includes two opposite states of the

* Persons labouring under consumption rarely abort, though labour pains frequently occur about the 7th or 8th month. A lady, and mother of a very large family, had consumption arrested by eight successive pregnancies. The disease returned in a very marked form after each delivery. As she did not give suck, impregnation speedily recurred, and her temporary comfort was thus insured. Death followed too closely upon her last delivery, to admit of the relief which pregnancy in so many previous instances had afforded.

system—first, too much uterine energy under a yielding action of the organs of the body generally; and secondly, too little uterine energy under a firm or unyielding action of the organs of the body:—a theory sufficiently ingenious, but by no means conclusive. It has been held by many, that abortion prevails in the nervous and the plethoric—or in other words, that it arises from mere uterine irritability in a feeble constitution, on the one hand, and from a loaded or over active state of the circulation in a robust habit, on the other. Admitting this contrast in general constitution, its influence in a practical point of view is very questionable. That the supply of blood transmitted to the impregnated uterus may be insufficient for the due developement of the containing and contained parts, will not be disputed. So far, however, from coinciding with Leake, that "women as often miscarry from the want of blood as from its redundance," (an opinion early advanced by Hippocrates, and maintained also by White), I am perfectly convinced that abortion is rarely occasioned by a want of blood, and frequently by a redundance of it. Burns informs us, that in persons who menstruate sparingly, the child frequently dies before the seventh month, from which he would infer a defective vascularity of the womb. The interruption to pregnancy, when conception happens during lactation, has been regarded in the same point of view, although referrible, in my judgment, rather to a deviation from nature than to a defective supply of blood; since very profuse hemorrhages have often been associated with this particular state of the system. Abortion is very common in persons of an irritable habit, as in their case the circulation in the ovum seems to acquire an activity incompatible with its connexion with the uterus. There can be no doubt that the capillary circulation may be preternaturally excited in distinct parts of the body, as, for instance, in an ovarian cyst, whilst at the same time the pulse

remains as slow as in health. It is reasonable to suppose that a similar provision may exist in the same system in the human ovum. Indeed we know to a certainty, that there is no synchronism between the fœtal and the maternal circulations.

It will be necessary to advert very briefly to the changes which succeed conception. An increased transmission of blood follows as the necessary consequence of impregnation. The quantity supplied to the capillary system appears to exceed the demands of the newly formed structure, and extravasation is the result; or the ovum may undergo detachment from mere irritability of the uterus, produced by the local determination. Even when the interruption to gestation is to be attributed primarily to the death of the fœtus, perhaps under a sudden mental disturbance, congestion of the vessels would of necessity result, and the ovum be expelled subsequently as a foreign body. Dr. Dewees, who regards the sponginess of the decidua and its minute vessels as calculated to relieve an excited circulation, further observes, "Were a mere increase of circulation all that is required, no woman would escape aborting who may labour under high arterial action." In answer to this statement I need only remark, that different individuals are very differently affected by the same kind of stimuli, and that if sudden vascular excitement does not most powerfully provoke abortion, how are we to account for its very frequent occurrence under mercurial action, or in scarlatina, small pox, measles, fever, and other acute diseases, (at which times it is attended with peculiar danger); or, why is intoxication so immediate an incentive or agent in its production? This state of the circulation may be presumed also from the fact, that very obstinate vomiting has ceased upon the first appearance of

the hemorrhage which attends abortion, when moderate in quantity, and before any part of the ovum has quitted the uterus. It may be inferred again from the head aches which so frequently precede its detachment. In the case of a lady subject to profuse menstruation, who has miscarried fourteen times at the end of the second month, excessive head ache occurred, in nine or ten instances, two or three days previous to the commencement of the discharge. This is a symptom which very commonly precedes ordinary menstruation, and diminishes on the discharge appearing. Where an hemorrhagic tendency prevails, I have observed the breasts to be turgid, and to discharge milk as freely at the end of the third month of gestation, as may occasionally be observed a week or two before delivery. Abortion has also been attributed to the undue compression of the veins of the legs by bandages; but unless varices prevail in a most inordinate degree, such a cause scarcely seems adequate to its production.

Again, the active state of the circulation may be clearly inferred from the appearance of the ovum, when cast off after a profuse hemorrhage. The quantity of blood usually effused between the decidua reflexa and the outer membrane, (giving it the tumid appearance spoken of by Denman*), or in the cellular part of the placenta in more advanced pregnancy, is very remarkable. It has been correctly observed, that "the anormal state of the uterine capillaries, which leads to hemorrhage, is the cause of abortion." "It is not, therefore, the premature effort of the uterus to contract that constitutes abortion, but the inordinate distension of its vessels which terminates in hemorrhage, and the occurrence of which then excites the uterus to premature contraction. The vessels of the uterus

* Introduction to Midwifery, vol. ii. p. 280.

and placenta, naturally full of blood, may, from a variety of causes operating on the mother, become unusually distended, and discharge blood, as in other hemorrhagic injections. This exudation, taking place either at the uterine surface or in the substance of the placenta, speedily detaches the placenta from the womb, the usual supply of blood is interrupted, and the fœtus perishes in consequence."*

As respects the prevention of abortion, the view we have taken of its causes directly leads to a treatment founded on rational induction. In order to distinguish whether abortion arises from a defective or a redundant supply of blood, we must narrowly investigate the patient's habits of life, the state of the general constitution, and also the local system of the ovum. The menstrual periods, and the circumstances attending former abortions and deliveries, should also engage our attentive consideration. Without this investigation our diagnosis will be liable to error, since an active circulation is perfectly compatible with a spare habit of body. The first mentioned class of abortions prevails most commonly in persons of languid temperament, cold skin, pale complexion, and feeble pulse; the second class, in individuals oppositely constituted. Nevertheless, as abortion sometimes occurs without any apparent deviation from health—the actions of the general system being nicely balanced—the distinctions here alluded to are necessarily limited in their practical application. In such cases our attention must be directed solely to the circulation in the ovum. The treatment of cases attended with a *defective* supply of blood should be calculated to improve the general health, and comprise the cold bath, a nutritous diet, moderate exercise, regularity of the

* Craigie's Elements of Anatomy, p. 721.

bowels, and light tonics. So far, and so far only, can I recognize any practical distinction when treating abortion in persons of different temperaments. Burns, speaking of the value of the cold bath, remarks, "by means of this, conjoined with attention to the vascular system and prudent conduct on the part of the patient, I suppose that nine tenths of those who are subject to abortion may go on to the full time." Important as it is to promote general strength, the state of the system in pregnancy is such as renders steel medicines, beneficial as they are at other times, for the most part inadmissible.*

In our efforts to prevent abortion under an excited state of the circulation, or a *redundant* supply of blood, the great object will be to guard against a determination beyond the requirements of nature. At a very early period of conception especially, all hurtful impressions should be most studiously avoided; since at this time the union is maintained slightly by the fine vessels only, and admits of easy destruction. It has already been observed that miscarriage very generally happens at a particular period of pregnancy, and that if this recurrent period can be passed, gestation will proceed auspiciously: every precaution, therefore, should be enforced. To bleed, after separation has commenced, will rarely, if ever, prevent expulsion. But if small bleedings are instituted whilst the detachment is undisturbed, commencing soon after the first expected menstrual period has passed, and repeated at intervals until after the third, or perhaps the fourth month, this will probably be successful. Dr. Hunter enjoined a single

* This opinion receives confirmation from the great relief which venesection, after the failure of opium and every other remedy, affords in the aggravated vomiting of advanced gestation, even in persons who have become much emaciated from its long continuance.

bleeding only, at an early period. In one instance, Dr. Dewees bled his patient seventeen times. It is always desirable to avoid bleeding to syncope, lest an injurious effect be produced upon the child. I need not here insist upon the propriety of a simple and rather spare diet, an open state of the bowels, perfect rest, pure air, and a regulated temperature. To allow freedom of circulation, tight lacing also must be avoided. Whether plethora acts mechanically upon the nerves (Burns' supposition) or not, I cannot think that his directions are judicious, when he enforces considerable exercise in plethoric subjects, to prevent abortion; nor can I agree with him in his statement, that abortion occurs from local weakness, when the general system is not feeble. At an early period of gestation, the recumbent position cannot be dispensed with. Walking or standing favors the descent of the uterus, and, by allowing the ovum to exert more or less pressure, directly provokes contraction. The patient should lie on a mattress in preference to a feather bed. Indeed we must enjoin all means which are calculated to arrest the velocity and force of the circulation, and guard as far as possible against every source of excitement, whether physical or mental. In very irritable habits, it may be useful to administer, at the accustomed menstrual periods, should pain or uneasiness appear, a small dose of laudanum. When irritability of the bladder or rectum prevails, owing probably to the descent of the uterus, (a frequent occurrence about the third month), opium will be found exceedingly useful; indeed, we have positive evidence of the efficacy of opium, employed as a suppository, in preventing abortion after that event had occurred eight times in succession. In a second instance of threatened abortion, or rather premature labour, opium was strikingly beneficial. A lady who had given birth to two children, both of them shortly after the sixth

month, was seized, about the same period in her third pregnancy, with pains similar to those which had for several days preceded the former deliveries—about twenty doses of opium, consisting of a grain each, taken at intervals, completely removed the painful contractions, and she attained the full period of nine months. When pain, especially of the spasmodic kind, accompanies gestation, it is highly material to remove it as early as possible; for though pain is not *essential* to uterine contraction, it most certainly is an evidence of it, and often proves the forerunner, first of hemorrhage, and subsequently of expulsion. In subduing this pain, bleeding is found exceedingly beneficial. An important moral direction must not be omitted. Not only should a temporary separation be enjoined after repeated abortions, but, when pregnancy is supposed to have taken place, such separation should be strictly observed until after the fifth month.

Unless the practitioner is devoid of sagacity or proper feeling, he can be at no loss how to express himself on such an occasion; nor can any man possessing either a cultivated mind or real affection for his wife, hesitate in complying without compromise with a duty so obviously incumbent. Unless this be conceded, no treatment will be successful. It is scarcely necessary to remark that the system, in confirmed cases, should be corrected by suitable measures prior to impregnation again taking place. I subjoin two cases in illustration of the principles recommended.

A lady of rather plethoric habit, who had been married ten years, had aborted at the ninth or tenth week a greater number of times than I will venture to name. I abstracted six ounces of blood, after the first expected menstrual period,

and repeated the bleeding at intervals up to the fourth month. The recumbent position was enjoined, stimulants forbidden, and very mild purgatives prescribed. At the ninth month, I delivered her of a living child.

Another lady of similar constitution had given birth, at the sixth month, to six dead children in succession. I commenced the bleeding at the fourth month, and placed her upon the plan of treatment above described—at the ninth month she gave birth to a living child. I have subsequently attended her in labour with the same happy result.

I admit that this plan of preventing abortion has no originality to recommend it; at the same time, I cannot but express my conviction, that it is to its partial instead of rigorous observance that its frequent failure is mainly to be ascribed, and that if a judicious moral and physical treatment is diligently enforced, a favourable issue will result even in cases confirmed by habit, and consequently of all others most unpromising in character. In women affected with a venereal taint who have frequently miscarried, the action of mercury is said to have removed the tendency to premature contraction of the uterus. But whether the leaven of syphilis remains in the system or not, this treatment should be postponed (unless under a pressing emergency), until after delivery, abortion having very frequently succeeded the specific action of mercury.

An intimate acquaintance with the symptoms which denote abortion, is quite essential if we would guard against errors in practice. So slight is the tenure of the ovum to the uterus in some individuals, that its expulsion shall be effected, wholly or partially, before the patient is aware of

what has occurred, and almost without either pain or hemorrhage. She feels an inclination to evacuate the contents of the bladder, and the cyst (with or without the decidua), perhaps already resting in the vagina, falls into the vessel unbroken, presenting a surface beautifully white. The converse, however, usually occurs; and the connexion is so long and tenaciously maintained, that the patient is subject to hemorrhage, continuing from a few days even to some weeks, before the entire separation is effected. From this it will appear, that the symptoms are subject to much variation, both in kind and degree. The process of gestation may be checked even whilst the cyst is still on its passage to the uterus; or, having acquired its tenantry there, it may be ejected immediately after, or at any period up to the sixth month of its residence within that organ. But its expulsion more frequently happens about the tenth or eleventh week, or the second month of the real age of the embryo,* which is often retained in utero after its vitality has ceased.

When abortion is threatened, the discharge is preceded by tenesmus, frequent micturition, a sense of bearing down or weight and fulness, pain in the back and over the pubes, accompanied perhaps with marks of hysteria and general irritability. The symptoms, which immediately attend the expulsion of the ovum at the earliest period after conception, are often very obscure, from their liability to be confounded with those of severe menorrhagia, or of ordinary uterine hemorrhage. But when the ovum has been connected for some

* It is difficult however to speak with precision of the age of a very young abortion, since we have now reason to infer that the period, which the vesicle takes in passing the fallopian tube, is by no means uniform. Even admitting that this view is opposed to Dr. Haighton's experiments on the rabbit, it seems to be borne out by the laws of gestation in the higher class of animals.

days with the decidua, the hemorrhage will be found associated with more or less of uterine contraction, and paroxysms of pain. I have already observed, that the cyst may be expelled unbroken or otherwise, having perhaps a small portion of the decidua attached to it; or the whole ovum (sometimes enclosed within a coagulum) may be discharged entire, an event which frequently happens within the first three months. It may be considered a general law of gestation, that when the contents of the small cyst and fœtus escape, about the third or fourth month, without the placental mass, this structure, being proportionally larger than the fœtus, is liable to be retained not only hours and days, but even weeks. It is altogether different in the last months of pregnancy, the size of the placenta being then in an inverse ratio to that of the fœtus. In general, after the third month, the process of expulsion bears a nearer resemblance to ordinary labour, the liquor amnii, fœtus, and placenta, being expelled seriatim. This is the usual course of nature: the ovum and secundines may, however, be expelled entire at any period of pregnancy. I have witnessed it many times in premature labours, (especially in twin cases), and also at the ninth month. The frequent retention of the placenta in early abortions, shows the propriety of carefully inspecting all substances which are passed from the uterus in this process. When the placenta remains attached to the uterus, there will be more or less pain, accompanied with a discharge which becomes increasingly offensive until the mass is cast off.

Our treatment of a threatened abortion would be materially influenced by the circumstance of the fœtus being living or not. To ascertain this point, attention should be directed to the symptoms which succeed conception. In addition to the local indications, the mammary and gastric

sympathies may aid our diagnosis. The state of the breasts cannot at a very early period be altogether relied upon, since many women experience pain and fulness of the mammæ, immediately before each menstrual period. But when this sympathy is associated with the peculiar gastric irritability so characteristic of pregnancy, we have the strongest presumption as to the preservation of fœtal life.

Gooch has given some admirable directions for determining the existence of pregnancy.* Very high eulogiums have also lately been bestowed upon mediate auscultation; a suggestion originally made by Kergaradec.† On applying the ear to the abdomen of a pregnant woman, with or without the aid of a stethoscope, a whizzing or hissing murmur is distinctly heard, synchronizing with the mother's pulse, and termed the "placental soufflet," or "bruit placentaire." This sound is supposed to depend upon the transmission of blood through the arteries of the uterus at the site of placental attachment, and possibly through the arterial tubes and cells of its maternal portion also; and may be perceived, though somewhat modified, even after the fœtal circulation has ceased. The double pulsation of the fœtal heart, which may also be heard, is an infallible evidence of a fœtus in utero. To this the soufflet must be considered subordinate. But when the fœtus has perished, at a very early period of utero-gestation before the action of the heart can be clearly ascertained, the soufflet alone is available. It is stated that the sound of the fœtal heart has been detected as early as the tenth week; but antecedent to the fifth month, deception on this point is very likely to arise. To the opinions here advanced respecting the

* See Gooch on Diseases of Women p. 198.

† See Fergusson's paper, and also Kennedy's, in the 5th vol. of the Dubl. Hosp. Reports.

soufflet as a test of pregnancy, an exception has been taken. It is said that the soufflet may be heard even in ordinary enlargements of the uterine vessels, and independently altogether of conception.

Previous to the appearance of hemorrhage, the extinction of vitality in the fœtus may be inferred from the breasts becoming suddenly flaccid, the milk suppressed,* the areola less darkened, the sickness suddenly ceasing, the circulation in the fœtus not being detected by the stethoscope, and its movements (after the quickening period) no longer perceptible; accompanied also by a sense of weight and coldness in the hypogastrium, and a progressive diminution of the abdomen.

It is very curious to notice, amongst the provisions of nature, the circumstances incident upon the loss of vitality in the fœtus, both in the earlier and latter months of pregnancy. Though life usually ceases in consequence of the escape of blood from the uterine vessels, it sometimes is destroyed in a manner quite inexplicable. Burns tells us, that in the great majority of cases, the fœtus is living when the abortion begins. This observation probably is correct, if it refers to the first attack of hemorrhage; but the reverse is generally the case at the time when contractions ensue. Indeed we possess the most conclusive evidence that occasionally hemorrhage commences subsequently to, and in consequence of, the death of the fœtus. It must, however, be admitted that fœtal life is sometimes maintained, though a small portion only of the placenta should remain adherent.* I was called to attend

* Milk is rarely secreted at these early periods. In one case, milk escaped freely at the 3d month, and was as suddenly suppressed on hemorrhage ensuing. The secretion may also cease on the death of the fœtus, at a still earlier period, when conception happens whilst an infant is still at the breast.

a lady in the third month of pregnancy, on account of a severe flooding which continued, recurring every second or third day, until the seventh month, when after a few slight pains, a very feeble infant was expelled, which survived an hour. The great mass of the placenta seemed to have undergone premature separation. I conclude from this and other cases, that the detached portions never again obtain a connexion with the uterine surface.* When the fœtus has been some time dead, the hemorrhage proceeds less directly from the general system than in cases in which the hemorrhage *precedes* the extinction of fœtal life, and is rarely attended with danger. Under this state of congestion, the placental vessels are rendered either wholly impervious, or still admit of a very imperfect and diminished circulation; and it has been rationally conjectured, that the blood taken up by anastomosing channels, instead of passing through the arteries of the cellular part of the placenta, is directly conveyed to the uterine veins, and from thence conducted back to the maternal system; a supposition which accounts for the occasional absence of hemorrhage in certain cases where the fœtus has been some time dead, as in such instances the uterine circulation has had time to establish itself. In some cases a fœtid discharge succeeds the death of the fœtus. It is by no means unusual for hemorrhage to appear momentarily after a sudden mental disturbance, which, under proper treatment, shall subside, and gestation proceed auspiciously, the fœtus receiving from it no hurtful impression.

* Leake, in his Practical Observations p. 255, says after Mauriceau, that a separated portion of placenta *never* afterwards adheres as appears after delivery; the precise quantity of it which was disunited being plainly pointed out by being covered with coagulated blood. Dr. Dewees speaks to the same effect. Agglutination *rarely* happens except at a very early period.

In the middle and latter months of gestation, the circumstances attending the expulsion of the dead fœtus are by no means uniform. Generally, it is expelled entire—in some instances, however, by decayed pieces. It may be enquired, how long may the fœtus be retained in utero, after decomposition has commenced? As a law of nature, decomposition will speedily supervene upon the destruction of the vital principle. Lecieux of the Hospice de la Maternité states, that the ordinary period of the residence of the fœtus in utero, after it has ceased to live, varies from five to twenty days. Dr. Blundell says, "When the ovum dies in the earlier months, it may be retained till the close of pregnancy." To show that it may be retained for several months, I select the following cases from among others of a similar character.

At the sixth month of gestation, a patient was seized with hemorrhage. After the third attack she discharged a single mass, very much resembling a young ovum; its inner surface having the membranes distinct, and its outer bearing the ordinary character of the decidua uteri. I opened it very carefully, but failed to detect the embryo, though I could recognize an imperfect funis umbilicalis. On the expulsion of this body, the hemorrhage was for a time suppressed, but subsequently returned at irregular periods, and with so much violence, that on three several occasions it was contemplated to effect artificial delivery; but in every instance, the hemorrhage, though violent, very soon subsided, and had not lowered the system sufficiently to justify turning; the rigid state of the os uteri, and the undeveloped and unyielding condition of the cervix, also forbad the attempt. At length, however, after the completion of the full period, the fœtus came away piecemeal, in a state of high putridity. The sudden hemorrhages usually amounted to about a pint and a

half, very black in colour, liquid in consistence, having no coagula, and of the most fœtid odour. In addition to the hemorrhages, the patient had for many weeks a constant and offensive draining; and when it is considered that the fœtal movements, and all other symptoms of pregnancy, had ceased from the first attack of hemorrhage, it cannot be doubted that the child died at that time, yet was still retained in the womb three months. It is singular that the os uteri should have admitted of a dilatation sufficient for the passage of the first ovum, and should then completely have closed.*

Mrs. ——, who has borne eighteen children, was seized with hemorrhage when advanced eight months in her nineteenth pregnancy. She was at this time very large, the motions of the child were strong and painful, the abdominal parietes unusually tight for a person having had so large a family, and milk issued from the breasts. The vomiting which attends early pregnancy had continued to distress her up to the present attack. The hemorrhage commenced very suddenly, and from the period of the seizure, she never perceived the slightest motion of the child; the vomiting ceased, the breasts became flaccid, the abdomen diminished in bulk, and its parietes became quite lax. At the end of the seventh week from the first attack of hemorrrhage (which had never ceased), I was desired to see her. She had very slight pains. The os uteri was dilated about the size of a half crown, and the membranes were lying over it. Above the membranes was a substance which felt like placenta. Not

* A very striking case of this kind will be found narrated by Mr. Chapman, in the ninth vol. of the Med. Chir. Trans. After the expulsion of a blighted fœtus and placenta, a living child remained in the uterus, and gestation was continued up to the ninth month. Dr. Clarke relates a somewhat analogous instance in vol. xvi. p. 53, of the Medical and Physical Journal.

being able to tear the membranes by an ordinary examination, I passed my hand into the vagina, and ruptured them; but the quantity of liquor amnii was so trifling as to be almost imperceptible. The substance referred to, proved to be the integuments of the head, in a lengthened and compressed shape. The head itself was resting on the cervix uteri, and the bones were exceedingly loose. The labour pains increased, though they were very feeble up to the birth of the child, which happened fifteen hours after the rupture of the membranes. The child was in a state of high putrefaction.

A woman received a violent external injury from a fall, when in the third month of pregnancy. Hemorrhage immediately occurred, and the symptoms of gestation disappeared. Two months afterwards (the flooding having continued more or less the whole period), the entire ovum was discharged, in a very putrid state. The fœtus was not larger than it usually is the tenth week after conception.——A woman in her fifth month of pregnancy, was suddenly seized with flooding; after which the abdomen and breasts subsided, the constitutional symptoms of pregnancy disappeared, she no longer felt the motions of the child, and experienced, at intervals, for upwards of five months, a very black coloured discharge. On the occasion of the last hemorrhage, I introduced my hand into the vagina, and by means of two fingers passed through the os uteri, extracted a large mass, composed chiefly of placenta, in a morbid state. The fœtus was small, and enclosed within the membranes.

Mental emotions cannot affect the fœtus in utero, unless through the medium of the circulation. I have already alluded to hemorrhage suddenly following passions of the mind, without the fœtus sustaining any injury. The result

may be otherwise. I am persuaded that a severe fright has instantly extinguished fœtal existence, when no degree of hemorrhage has supervened until several days have elapsed. At length, however, after a continued discharge of dark coloured blood, the fœtus has been expelled in a state of putridity. In a majority of instances, the expulsive action supervenes speedily on the death of the fœtus, as in the annexed instance.

Some time ago, I was called to a woman, a female catheter having unfortunately been allowed to pass entirely into the bladder. The patient was in the fourth month of pregnancy, and had experienced a retention of urine, by no means uncommon just before the uterus finally quits the pelvis for the abdomen, but in this instance occasioned by the womb being considerably prolapsed,—a circumstance which it is material to mention. At the time I saw the patient, the catheter had been in the bladder eight hours. It lay in the centre of the organ quite transversely; and the urine having dribbled away, the bladder was in as contracted a state as the catheter admitted of. By means of a long and very slender pair of forceps passed per urethram, I embraced the instrument near one end, and with the two fore fingers of the left hand passed in the vagina, carefully elevated the other end; and, having thus brought it into the horizontal direction, gently extracted it. As little injury as possible was inflicted upon the patient; nevertheless the ovum was discharged on the third day, but without hemorrhage. The fœtus presented a perfectly white and beautiful appearance; the scalp excepted, under which there was a considerable extravasation of blood; and to this mechanical injury (occasioned no doubt by the difficulty experienced in giving the catheter the horizontal direction), its death may be directly ascribed.

Abortions are occasionally connected with irregularities in structure. By a law of nature, a diseased or blighted ovum, by exciting muscular action, will be expelled, in the same way as a polypus, or other morbid growth, is ejected from the uterus into the vagina. A placenta, when thus affected by disease, and low in organization, is nevertheless sometimes retained in utero much beyond the ordinary period of gestation; and as it is attended with the early symptoms of gestation, a deviation from nature is not for some time suspected. The difficulty of forming an accurate diagnosis before the sixth month, even when aided by auscultation, must be apparent to all. A woman, who considered herself in the fifth month of pregnancy, applied to me on the nineteenth of November, 1830, on account of uterine hemorrhage, the catamenia having ceased the commencement of the July previous. The abdomen was very prominent; but from this period it progressively became smaller; at the same time I was certain, from repeated examinations, that the uterus contained a large substance. The os uteri was nearly closed, and the cervix undeveloped. The hemorrhage continued incessantly four months, and was then succeeded by leucorrhœa. In June, 1831, she was seized with pains, which ended in the expulsion of a very large and diseased placenta, of the grape appearance, enclosing a very small fœtus, about the size of an abortion of six weeks. A copious discharge of very dark coloured blood escaped with the mass. In form these bodies are usually oblong, the exterior resembling the decidua uteri, the interior not unlike a bunch of grapes; each eminence being covered with a very thin membrane, and having a dusky red fluid interposed, the fluid in each portion freely communicating. Masses of hydatids, or small vesicles, are often appended both externally and internally. In structure the lobes vary, being soft, homogeneous, and of a pale red colour, in some; while in

others, they appear like coagula enclosed in thin membranous septa. Many of these growths resemble the firmer polypi, or fleshy tubercles, having an imperfect internal membrane. A few of them, except being longer in form, and heavier, differ little from the healthy ovum, having a single cavity only, containing a turbid or bloody fluid. The vestige of a very small fœtus may sometimes be discovered within the ovum, in a rude and undigested shape, attached by a minute filament, its size being in an inverse ratio to that of the placenta. The fœtus must, however, maintain its vitality, though it ceases to grow with the mass which encloses it; and this is the more remarkable, as in one case which occurred under my observation, the funis was extremely short, and not thicker than a good sized bristle. But, though fœtal or rather embryotic existence may not be extinct, the mass may to all intents and purposes be considered a foreign body. The observation made both by Leake and Hunter, that a real conception may be dissolved, and pass off in a fluid form, leaving the placenta adhering and increasing in size, accords with experience. Gooch, however, speaks of the ovum being produced without the fœtus. In other abortions of this kind, the mass comes away more consolidated in appearance, and having no definite form. A few of them in shape resemble the cavity in the uterus.

The only danger, then, to be apprehended from abortion, arises from hemorrhage. Some authors, M. Duges for instance, describes two species of hemorrhage, the arterial and the venous.* Under a high degree of excitement, either of

* In the *early* weeks of gestation, the extreme vessels, whether veins or arteries, *anatomically speaking*, are so minute and blended together as to exhibit no precise distinction either in appearance or in the colour of the blood.

the general system, or of the capillary circulation of the ovum, the arterial action will no doubt predominate over the venous. Under a contrary state of the general system, or of the local system of the ovum, congestion in the veins will naturally arise, especially when vitality has ceased in the embryo or fœtus. In other respects, the distinction here alluded to is calculated only to mislead the practitioner; since the colour of the blood generally depends upon the suddenness or slowness of its escape from the uterus, and upon atmospheric influence. When we consider the peculiar structure of the ovum, and the free communication which exists in the vessels of each respective part, we clearly perceive how a large or protracted effusion of blood, especially under an excited circulation, may proceed from a detachment of small extent; since the vessels, at an early period after conception, though small, are exceedingly numerous. But as pregnancy continues to advance, a striking contrast is observable between the vessels in connexion with the decidua, and those which pass to the placenta; the one remaining comparatively small, whilst the other, which are very numerous, progressively increase in size. The more elaborated the cellular part of the placenta becomes, the more sudden and abundant will be the hemorrhage. Before the beginning of the fourth month, therefore, abortion rarely proves fatal, the calibre of the vessels being comparatively small; and hence, even under a very active circulation, the demand on the system is usually sustained without danger to life. But small as the vessels are in size, (and their smallness may be considered as the surest safeguard against a sudden and immediately dangerous hemorrhage), still the quantity of blood occasionally discharged is almost incredible. A gentleman extensively engaged in midwifery practice tells me, that one of his patients

lost, on a moderate computation, six quarts of blood in a few hours.

It may be stated as a general principle, that all sanguineous effusions occurring during pregnancy, tend to impair or destroy gestation, and consequently to promote expulsion. The risk of this will be proportionate to the degree of the hemorrhage and the frequency of its renewal. Its effects upon the parent will be in the same ratio. Abortion is said to occur most frequently when the effusion proceeds from the highest part of the fundus uteri, since the bood in its escape does not find a ready access to the os internum, and a more extensive degree of separation is the consequence. Under a moderate hemorrhage, or when contraction does not ensue, we need not absolutely despair; for in twin cases, an immature fœtus has sometimes been expelled, whilst another has remained in utero to maturity; the os uteri becoming perfectly closed. But the extension of the cervix uteri, whether occasioned by the unfolding of its structure, or mere relaxation, it may be said, forcibly denotes expulsion. Still, until it has become quite evident that gestation has really ceased, it will be our bounden duty to promote its continuance by such means as are best calculated to tranquillize the general circulation, and indeed to treat the case as though we anticipated a successful result. But when, in addition to the hemorrhage being considerable in quantity, frequent in return, and protracted in duration, general and regular contractions of the womb are excited, and the os internum has undergone a partial dilatation, there can be no chance of the process of gestation being resumed; preventive measures will be useless; and our great object will be to lessen the uterine discharge, and promote the expulsion of the ovum.

It is very material to arrest hemorrhage speedily, since its continuance soon provokes the contractions of the womb: and, independently of its serious effect upon the patient, each return of flooding greatly diminishes the chance of gestation proceeding.

As hemorrhage ceases temporarily under the recumbent position, and recurs on the slightest exertion, perfect repose is of the utmost importance. The bowels must be regulated by mild injections, or saline aperients; refrigerants and acids may also be prescribed; the apartment kept cool, all stimuli avoided, and, if necessary, cold lotions applied to the external parts. In obstinate hemorrhages, threatening to terminate in abortion, and attended with considerable excitement, digitalis and the superacetate of lead are recommended on the highest authority. I cannot agree in the eulogiums which have been bestowed upon digitalis. I object to it on account of its known accumulating property being suddenly exerted, and thus the circulation, alike of the parent and of the ovum, is perhaps acted upon to the injury of both. Whilst we have mild and safe remedies to arrest an increased circulation, I think we are not warranted in having recourse to a medicine whose effects are allowed to be most uncertain.

When flooding threatens to be fatal, the tampon or plug, by staunching the flow of blood, is at once effective and immediate in its action. This grand agent, though noticed by many of the earliest writers, was not applied at all conformably with the principles of science, until advocated by Leroux. It is evident, however, that the efficacy of the tampon is far from being duly estimated, even at the present day, notwithstanding all that Dewees, Burns, and other eminent modern practitioners, have advanced in its favor. The

uterus, from the closeness of its texture, and the small size of its cavity, will resist distension in the early months. But in the latter months, this is not the case; for, as its substance has then become very ductile and yielding, its cavity capacious, and its length greatly increased, accumulation will more readily take place; and since this is the objection which attaches to the plug,—it may be asked, up to what period of gestation can it be applied without incurring the risk in question? I should say, certainly up to the beginning, or perhaps the end, of the fourth month. Its advantage, particularly about the third month, is very striking. The vessels will then have acquired a size sufficient to yield a copious effusion, and our other manual resources are at this time very limited. The rupture of the membranes is rarely justifiable before the sixth month. Before the fourth month, this measure is quite out of the question; but even were it otherwise, since all possibility of the continuance of gestation terminates with this operation, which does not necessarily attach to, although it very generally follows, the use of the plug, it is most fortunate, that we have so effective an agent within our control. It may be laid down as an axiom, that the hemorrhage which accompanies an early abortion ought never to proceed to the direct destruction of life; for since the uterus cannot be distended by effused blood until the fourth month, and as the tampon will certainly command the hemorrhage, death from this cause will generally be prevented, when the remedy is timely and properly applied. Notwithstanding this, fatal results are every now and then allowed to happen. In one instance, occurring at the ordinary period of eight weeks, the patient died from exhaustion before any part of the ovum quitted the uterus. In a second, occurring about the fourth month, the small fœtus had been expelled, and the tender funis had descended into the vagina, but the

placenta did not separate. This patient also died. In a third and recent instance, at two months, in which the hemorrhage was most profuse, the patient died seven days after the expulsion of the ovum, under circumstances of absolute inanition, accompanied with a spasmodic state of the pharynx and œsophagus; the jaws at length becoming immoveably fixed. A fourth and similar instance has occurred under my observation. Such fatal results are certainly unusual at these early periods. For the purpose of plugging the vagina, a soft sponge soaked in vinegar, solution of alum, or other styptic, is usually selected: but sponge, unless smeared with ointment, or steeped in oil, is not well adapted for the purpose; since, from its porosity, the blood is not completely coagulated, the liquid parts passing through its substance. I give the preference to lint, cotton wool, or a soft handkerchief. The removal of the plug, of whatever substance composed, is facilitated if oiled before it is used. The T bandage may then be applied.

The plug is peculiarly serviceable in two conditions of the uterus—first, when the hemorrhage is great, and the os uteri firm and unyielding; and secondly, when the flooding has so far depressed the system as to leave the uterus incapable of acting. The pressure of the plug excites the organ to contract. Fully to obtain its effect, it is material that the vagina be thoroughly filled with the substance we employ. If the plug only occupies the cavity partially, the blood may continue to escape, as I have frequently noticed, and thus defeat our intention. Several small pieces are preferable to a large single piece; the application is easier, the pressure greater, and the coagulation more readily effected. If, as occurred to me in one case, the urethra is so compressed by the plug as to cause obstruction of urine,

we can remove the piece last introduced, without at all disturbing either the other pieces or the coagulum formed at the os internum. Under this treatment, the deciduous membrane possibly may not pass off entire, as under its ordinary expulsion, but escape in shreds. The discharge also becomes more offensive, until the whole contents of the uterus are cast off. But the expulsion of the ovum, when entire, is sometimes delayed several days, even after the plug is withdrawn; although under an active contraction, the ovum may be soon expelled, and the uterus recede a little in the pelvis, leaving it resting on the plug.* Dr. Dewees authorises the removal of the plug after twelve or fourteen hours. It should not, in my judgment, be removed under twenty-four hours. Anterior to this period, the constitutional powers will not have sufficiently recovered to bear a subsequent hemorrhage, should the withdrawal of the plug be followed by it; but after that time, nature usually will be adequately recruited to bear a recurrence (though the bleeding rarely recurs), until the plug can be replaced. After twenty-four hours, moreover, the coagula surrounding the plug, from confinement, becomes extremely offensive, and on this account requires to be removed. In a case attended with a most alarming exhaustion, in which I employed the plug three weeks after delivery, the hemorrhage soon recurred on its being withdrawn, and continued several hours, until a large piece of placenta was expelled. Though the uterus was too firmly contracted to

* In a case of intestinal hemorrhage, the value of the plug was peculiarly striking. A few years ago, some piles which had protruded beyond the anus having been excised, the cut surfaces immediately retracted beyond the sphincter muscle. In the course of two hours after, the patient had voided two chamber utensils ofblood. Life appeared almost extinct. Directly upon the last discharge, as it was impossible to secure the bleeding vessels, I plugged the rectum, and effectually suppressed the hemorrhage. This treatment, though it occasioned a temporary retention of urine, saved the patient's life.

admit of a renewed distension, this second hemorrhage had very nearly proved fatal. When, therefore, the patient's state, at the expiration of twenty-four hours, is such as leads us to fear the consequences of a return of the hemorrhage, it will be improper to remove the plug under forty-eight hours.

From the difficulty of introducing the hand into the uterine cavity before the sixth month of utero-gestation, we are advised to confine the rupture of the membranes to the remaining three, lest the child should present in opposition to nature, and require to be turned. Admitting the force of this objection, I should not hesitate to perform the operation,* when practicable, after the completion of the fourth month, provided the hemorrhage threatened the destruction of life, *but under no other circumstances*, since the placenta is very liable to be retained when the ovum is only partially expelled. Baudeloque sanctions the rupture of the membranes at any period after the third month. In a case in which the placenta was affixed to the cervix uteri, the membranes were ruptured before the fifth month, and with a successful result. Possibly in this instance the hemorrhage might really have arisen from an accidental, not from a specific cause, since the unfolding of the cervix uteri does not usually commence prior to the termination of the fifth month. Dr. Blundell seems disposed to justify the effort to pass the hand into the uterus in the early months of pregnancy, provided the operator be very skilful, and possessed of that desideratum in the exercise

In order that the membranes may be torn, it is essential that the cervix uteri be cautiously dilated with the finger. Experience enables me to affirm that when the uterine relaxation is considerable, this operation can be performed after the fourth month without danger. Under great rigidity this measure ought not to be undertaken, and indeed can scarcely be necessary. In the contracted state of the neck of the womb, the attempt to pass a sharp pointed instrument might endanger its substance, as in Dr. Hunter's case, the result of which was fatal.

of obstetricism, a small hand. Exceptions may undoubtedly arise; but, as a general rule, it is as impolitic as it is unsafe to hazard the attempt antecedent to the sixth month of utero-gestation. Its accomplishment, moreover, prior to this period, is not only very difficult, but for the most part wholly impracticable.

Manual operations, then, as the ordinary treatment of abortion, must be deprecated, especially before the fourth month. Nature generally is so competent to the expulsion of the early ovum, that we should view all interference with jealousy and distrust. If an ovum is partially detached, and protruding through the os uteri, we may try to stimulate the contractions of the organ by means of two fingers; but an attempt to extract it might leave a portion behind, and the os uteri closing upon it, would thereby convert a simple into a complex case, and involve us in difficulty. This caution has its limits. It is the rule, but liable to exception. For if, under an alarming and *present* flooding, the os uteri is moderately open, and the ovum in a great measure loosened from its connexions, a manual operation may perhaps be advisable, especially should the placenta be affixed to the inferior part of the womb; under such circumstances, to arrest any further effusion must be a matter of very great importance. It is recommended, whilst pressing down the uterus with the right hand placed over the pubes, to insert two fingers of the left into the fundus of the organ, or as far as we can reach, and gently pass them round the contents; or the mass possibly might be extracted by means of a suitable instrument.* I have in my possession an entire ovum, which was

* Baudeloque refers to Levret's forceps as calculated to answer the purpose. Dewees uses a small wire crotchett, and prefixes a drawing of it to his work. Gooch employed the nasal polypus forceps.

brought away after death. In this case, after repeated hemorrhages, the patient died; and, on opening the body, the ovum was found totally detached from the womb, and just at the point of descending into the vagina. A slight effort would have released it, and most probably have preserved a valuable life. In order to remove the ovum, it may be necessary to pass the entire hand into the vagina.

With respect to the placenta, it may be observed, as a general rule, that in abortion and premature labour a longer time will be requisite for its detachment; more skill and caution consequently is demanded in its management, both on account of the comparative difficulty of passing the hand, the farther the patient is from the completion of the full term of pregnancy, and also on account of the softness of the placental mass. Since no manual extraction of the placenta can be effected prior to the sixth month, it is most important that the general contractions of the womb should be excited early after the delivery of the child; for though the placenta may possibly remain in utero some time, and at length be safely cast off, still, as a foreign body progressively decomposing, it cannot remain many days with impunity. In order to facilitate the separation of the immature placenta, when retained an undue length of time (varying from a few hours to fourteen days, or possibly longer), if we cannot reach the mass with one or two fingers passed within the os uteri, we must employ remedies of the most gentle character, as frictions over the hypogastric region, the application of cold, a bandage, and the ergot of rye. If these should fail, we may prescribe an ordinary purgative, or a stimulating enema. When the mass is not soon detached after the expulsion of the child, an irregular contraction of the uterus, below the placental site, is almost certain to ensue. This contraction,

whether affecting the mouth or centre of the organ, together with the small size of the uterine cavity, when partially emptied, either altogether resists the introduction of the hand, or renders its passage exceedingly difficult. A violent attempt may be fatal in its consequences, and is therefore quite unallowable. During its retention, the patient is exposed to a threefold danger. First, hemorrhage. This may arise at any period, and will correspond with the degree of placental detachment. Secondly, inflammation of the uterus and contiguous viscera. To this danger the patient will be exposed after the first day or two. Thirdly, irritative fever of the most formidable nature. The appearance of the symptoms, both local and constitutional, will synchronize with the period of utero-gestation, and with the extent, and commencement, of placental decomposition. I subjoin an interesting case in illustration.

A young unmarried woman, about the sixth month of pregnancy, was delivered of a dead child; and the funis, being tender, was torn from its point of insertion. The practitioner, being unable to pass his hand in utero in order to detach the placenta, administered the ergot of rye, and other remedies. After some days, the attempt to remove the placenta was renewed, but without success. There was no hemorrhage, the lochial discharge was inconsiderable, and the patient did not appear to suffer (at least in any material degree, though she complained of more or less pain in the abdomen), until the seventh day, when she was suddenly seized with delirium, cold perspiration, and convulsions, which soon terminated in death. An opportunity was afforded me of attending the dissection. The intestines were in places slightly agglutinated by narrow bands of coagulable lymph. The uterus was quite healthy. The placenta was

attached partly to the body of the uterus, but chiefly to the fundus over its highest point, about two thirds being fixed to the posterior, and one third to the anterior surface, and inclining rather to the left side. The placenta, though somewhat decomposed, had not undergone any separation, but so far from having any morbid attachment its whole surface peeled off very easily. A slight puckering (apparently the remains of the hour-glass contraction) was distinctly observed encircling the centre of the organ. The brain was perfectly healthy in all its parts, and the ventricles did not contain more fluid than natural. The constitutional treatment, recommended in cases of disruption of the placenta, is applicable to states of this description. Transfusion, it appears, has been successfully performed in a case of hemorrhage the consequence of abortion.*

From post mortem examinations of the uterus, at different periods after abortion, I consider that this organ is longer in returning to its ordinary size than generally is supposed. Thus we find, that after the whole of an abortion has been expelled, the discharge sometimes continues profuse for many weeks. Injections, employed so that the liquid may pass into the uterine cavity, are exceedingly useful in such cases. For this purpose, and in order that the fluid may be retained for two or three minutes, the patient should lie on her back, with the head low, and the pelvis somewhat elevated. The back and loins may be sponged night and morning with cold water in which salt is dissolved, or vinegar and water; and after a time cold sea bathing will be highly efficacious. I can confidently recommend the sulphate of zinc, administered in pills, in one or two grain doses, perhaps combined with a quarter or half a grain of opium to prevent nausea.

* Lancet, No. 231, p. 662.

In these and other passive discharges from the uterus, tannin has also been exhibited with marked benefit. Galls, as containing tannin, may be prescribed in any convenient form. But it appears to me that catechu, (especially the darker kinds of catechu), which contains the active principle of tannin and also gallic acid very largely, is a far more eligible medicine. It may be prescribed in any of its officinal preparations, viz. electuary, infusion, or tincture. As tannin is incompatible with liquid forms of opium, this anodyne, when exhibited with catechu, must be given in the form of pills. Catechu, from its tendency to check the alvine secretions, may perhaps be objected to; but, since purging is calculated to increase uterine hemorrhage, and as constipation may be prevented by simple enemata or the mildest class of laxatives, this objection is not very important. Kino also has been administered with advantage in these cases, but this substance contains less tannin than catechu. Where the secondary hemorrhage continues long, the sulphate of quinine, by counteracting debility, promises to be useful; and in order to give additional tone to the general system, steel medicines may subsequently be administered. In very obstinate drainings from the uterus mercurial action, according to Professor Burns, has proved serviceable; probably by changing the secretions generally.

Since writing the above, my attention has been directed to the article "Abortion," in the Cyclopœdia of Practical Medicine, page 10. There is one point to which I think it necessary briefly to allude. The author, (Dr. Lee), observes, "By far the most frequent cause of abortion is in the product of conception itself; viz. in a diseased condition of the fœtus, or its involucra." The result of my examinations of the ovum cast off in abortion, both in its healthy and diseased state, is the converse of what is here stated. I have found the ovum healthy in all its parts, even in women who have aborted a number of times in succession. If the case were as Dr. Lee represents, mal-formations would cease to be an exception to the ordinary course of nature, and treatment would rarely be of any avail. I fully concur in his observation, that abortion *often* arises from congestion, or an unusual determination of blood occasioning detachment of the placenta, especially in women who menstruate copiously.

CHAPTER XV.

ON ACCIDENTAL HEMORRHAGE.

Hemorrhage arising in advanced pregnancy may be divided into two principal classes, the accidental and the unavoidable. It is the accidental form we now propose to consider. By this term is to be understood a partial separation of the secundines from the point of their ordinary attachment, during the last three months of gestation. In these floodings, the effusion may proceed from two distinct sources; viz. from the large vessels which supply the placenta, and from the smaller ones which supply the decidua, or those which are in slight connection with the membranes. To the first of these sources of hemorrhage, which often proves very serious, our attention will be particularly directed. The second, and perhaps the most frequent form of effusion, is in all respects of inferior moment. To assist us in forming a correct diagnosis, it may be observed, that when the effusion occurs suddenly, is frequent in return, and copious in amount, detachment of the placenta may strongly be suspected. When the hemorrhage is moderate in quantity, and speedily acquires a pale or watery character, we may presume that it proceeds from the vessels of the decidua, and a reasonable assurance may be entertained that gestation is unimpaired. It must be allowed that this expectation may be disappointed although the amount of hemorrhage may be inconsiderable. But, notwithstanding that fœtal existence remains unaffected, the circulation may be sufficiently disturbed to provoke

uterine contraction. All discharges of blood, therefore, in the latter months of pregnancy, should engage the vigilant attention of the practitioner. A slight and single effusion may be unimportant, as it may perhaps proceed from a very trivial separation, and may be such as can be arrested by ordinary treatment. In proportion, however, as gestation is advanced, and in proportion as the discharge, whether proceeding from the larger or smaller vessels, is profuse in quantity, sudden in appearance, and frequently renewed, the greater is the danger to be apprehended, and the less prospect there is of its being effectually arrested by any other means than expulsion. The remarks already made respecting the causes of abortion, in a great measure apply to our present subject. In addition to an excited or disturbed state of the utero placental circulation, occasioned frequently by a stimulating diet, or impressions acting upon the mind, it may be remarked that muscular exertion, external injury, or whatever prematurely excites the contraction of the uterus, may detach the ovum, and produce hemorrhage. Some effusions, I think, may be ascribed to an unusual tenuity of the edge of the placenta; and when separation, even of a very small portion, takes place, a further detachment may be occasioned by the blood being insinuated under an additional part of the mass: the blood, in travelling to the os uteri, easily detaches the membranes, the gelatinous deposit is readily dispossessed, and the hemorrhage appears externally. Our prognosis (ever to be guarded), must, in addition to the circumstances already mentioned, be determined by the patient's previous habits of life and powers of constitution; by the state of the circulation; and the effect produced upon the general system. The propriety of making an early examination per vaginam in these effusions occurring in advanced gestation, more particularly when not characterized by pain, is too obvious to be insisted upon. To neglect this examina-

tion might be dangerous in the highest degree. Generally, in accidental hemorrhage, the membranes will be felt presenting at the os uteri; but in many cases we cannot distinguish them at all, unless the hand is passed into the vagina.

It has been already observed that manual operations are generally inadmissible in the early months of gestation. In the latter months, on the contrary, manual assistance may be indispensable to the preservation of life; occasionally in the accidental, almost invariably in the unavoidable form of hemorrhage. It is necessary, therefore, to watch these hemorrhages with the utmost circumspection, in order that expulsion, if necessary, may be promoted whilst the patient has strength to sustain it. As Burns observes, "We must not witness many and repeated attacks of hemorrhage, sinking the strength, bleaching the lips and tongue, producing repeated fainting fits, and bringing life itself into extreme danger." Let us, therefore, dispassionately consider the most approved treatment. The subject involves the highest interest, and demands peculiar attention. The ordinary management is the same as already recommended in hemorrhage which threatens abortion—and indeed must comprise whatever tends to lower a frequent and forcible state of the circulation, when such is found to prevail. Under much nervous excitement, opium also may prove useful. The propriety of enforcing this treatment at the commencement of an hemorrhage is admitted by all—but should this treatment prove inefficacious, great contrariety of opinion is found to prevail amongst the most eminent practitioners, as to the measures which ought then to be adopted. There are two disputed points which especially claim attention. The first refers to the propriety of rupturing the membranes, in preference to immediate delivery by

turning the child: the second refers to the employment of the tampon, until the os uteri has undergone a certain degree of relaxation, and during a state of asphyxia.

I. That the puncture of the membranes was recommended in hemorrhages by several of the early writers upon midwifery, cannot be questioned; but to Puzos is due the credit of having first proposed it on defined principles. A modified operation is, however, performed in the present day. Artificial dilatation of the uterus is rarely resorted to; nor do we ordinarily, after the feet are brought to the vulva, consign the case wholly to the efforts of nature. Independently of the sanction of Puzos, Rigby, Denman, Baudeloque, Capuron, and Merriman, general experience has now fully attested the propriety of rupturing the membranes in accidental hemorrhages; yet notwithstanding this, in addition to sixty cases reported by Rigby, and thirty by Merriman, of the successful result of this operation, Hamilton, Burns, Dewees, Stewart, and other eminent men, are decidedly opposed to its performance. The objections to it rest principally on two grounds; in the first place, that gestation necessarily ceases with it; and in the second, that the contraction induced is both insufficient to arrest the hemorrhage, and would render turning exceedingly difficult.* The answer to both is very simple. No man would resort to this operation but under a choice of evils, and in preference to a forcible delivery by turning the child; —and again, the contraction which follows the escape of the liquor amnii is almost invariably sufficient to close the bleeding vessels. The efficiency of this contraction in restraining

* I know but of one instance of this kind, and in this I admit the contractions were in consequence so powerful as to resist every attempt to deliver, until the system was brought under the influence of opium.

hemorrhage, was very early in life impressed upon my mind. In attending a labour during my apprenticeship, the patient, soon after the birth of the child, had a pain unusually violent. With the view of separating the placenta, I made an effort with the funis greater than was consistent with prudence—I withdrew the placenta. A frightful stream of blood immediately followed. Fortunately, at the moment, the membranes of a second child gave way; the arm presented, and, the contractions being violent, the hemorrhage directly ceased. From inexperience, I was not aware it was a twin case, and mistook the efforts to expel the second child, for the efforts which usually attend the expulsion of the placenta. Instances might be adduced, in which hemorrhage has arisen *after* the spontaneous rupture of the membranes, and there is a chance, therefore, of the artificial rupture not succeeding. Such an event is unlikely to happen; and even if it should occur, the amount of hemorrhage, in all probability, would be trivial. The success of this practice will be materially influenced by the period of gestation. The quantity of liquor amnii (which varies greatly even at the same periods of pregnancy), is proportionably more abundant at the seventh than it is at the ninth month. Its evacuation, therefore, will, cœteris paribus, be attended with greater success at the former than at the latter period. The success will be commensurate also with the amount of the fluid discharged. Under the partial emptying of the uterus, by the rupture of the membranes, whether the discharge of the waters be immediately succeeded by pain and expulsion or not, the uterine fibres are reduced into closer approximation, and by the pressure thus exerted upon the exposed vessels, the hemorrhage either ceases altogether, or becomes watery, and is so far diminished as to be no longer attended with danger. In the words of Dr. Blundell, "Although the continuance of the flooding may

now and then demand the operation of turning afterwards, yet in the majority of cases such a necessity but rarely occurs; so that to this beautiful operation we may safely venture to confide."* Capuron† also remarks, "No one can say that it does not offer the greatest advantages in the cases where the placenta is affixed on any one of the points of the uterine cavity; but we must admit that it is insufficient when the body is adherent to the neck of the womb." It must certainly be allowed that when this method does not succeed, turning will be less easily accomplished. It may, however, fairly be presumed, that a contraction so forcible as to render turning difficult, would not only arrest the hemorrhage, but also dilate the os internum, and expel the child; nor must it be forgotten that this form of hemorrhage is often associated with premature delivery. As the head of the fœtus may generally be felt resting lightly upon the ossa pubis, an objection to the puncture of the membranes, founded upon the mere chance that the presentation may prove that of an arm, cannot apply to such cases.‡ Granting, however, for a moment that this difficulty may occur, the prospect of the spontaneous evolution of an immature fœtus, and the comparative ease with which the process would under these circumstances be performed, must also be taken into account. Burns, being of opinion that the plug will arrest the hemorrhage until turning can be safely undertaken, not only urges general objections against the rupture of the membranes, but also pleads the life of the child as an additional argument for direct delivery.

* Lancet, No. 231, p. 648.

† Cours D'Accouchemens, p. 341.

‡ I have seen three cases of evolution. The first, from the large size of the child, was attended with great difficulty. The second occurred in the delivery of a second child in a twin case, and was soon accomplished. The third happened in the seventh month, and was effected particularly quick.

The Professor further declares, that the mere presence of the ovum is inseparable from danger; admitting, at the same time, that in bad cases the patient may die under the actual delivery (no recommendation, by the way, for its performance.) As to the life of the child, it must be recollected that it not unfrequently perishes (especially in a first labour), during this mode of artificial delivery; and even admitting that the plug is effectual in arresting the hemorrhage, and that it can safely be employed (a disputed question), the propriety of turning the child is then to be determined. Experience is unequivocally in favor of the milder plan of rupturing the membranes. That instances of very severe hemorrhage, probably from partial separation of the placenta, do occur, in which delivery by turning is preferable to the rupture of the membranes alone, every unprejudiced mind must allow. To resort to this proceeding in hemorrhages of a less dangerous character, arising, perhaps, from the vessels of the decidua, and occurring before the completion of the full term of pregnancy, is not only contrary to general experience, but is substituting an hazardous and painful operation in the place of one comparatively easy and safe, and also far more consonant with the process of nature.

In the rupture of the membranes we must be materially influenced by the condition of the os uteri, whether it be dilated or dilatable, or in a closed and undilatable state. If it is dilated, or disposed to yield, we may at once proceed. If in a contrary state, prudence demands that we should pause, and narrowly observe any change which may happen, in order to embrace the most favorable moment for acting. Some practitioners, however, would not wait for uterine relaxation. In a number of cases under my own immediate observation, the membranes, with a single exception, were torn without

passing the hand into the vagina. The stimulus of the finger insinuated within the os uteri, and freely moved about, usually rendered the bag sufficiently tense to admit of being ruptured. Under its flaccidity, if the end of the finger is applied over a single point of the membranes, so as gently to tear them, enlarging the rent as much as we can, the object may be accomplished. Some employ a probe, or a sharp pointed instrument constructed expressly for this operation. The finger, however, is quite sufficient, and safer than any other means. It has been already observed, that the success from puncturing the membranes will depend in some measure upon the quantity of liquor amnii, which, near the close of pregnancy, is occasionally so small, that on its being evacuated, the uterus is scarcely brought into closer contact with the body of the infant. In such a case, the operator would probably think it prudent to proceed at once with the delivery by turning. The failure of the operation in arresting hemorrhage, is attributable not so much to the liquor amnii being inconsiderable in amount, as to the head of the child being so situated as to oppose its free evacuation. When the liq. amnii escapes spontaneously in trifling gushes, and at long intervals of time, every practitioner too well knows how tedious the parturient action always proves. I am aware that Burns objects to the head being raised, in consequence of the liquor amnii being thus allowed to escape; with me this is its great recommendation. The importance of raising the head of the child may be seen by the following detail.

Mrs. ——, at the full period of utero-gestation, was seized with violent hemorrhage, 2nd April, 1831, at eight o'clock, P.M. It continued increasing to one in the morning, when I saw her. She was then gaping, the pulse was feeble and slow, the countenance very pallid. I found the fœtal head

upon the os uteri, which easily admitted my finger. By irritating the os internum, the membranes were rendered tolerably tense; I then tore them; but not more than a table spoonful or two of the liquor amnii escaped. I therefore raised the head of the child, and a considerable quantity was immediately evacuated. No placenta could be felt, though the finger was passed around the entire circumference of the os uteri. The hemorrhage ceased. I ordered forty drops of tinct. opii. Three hours after my visit, the patient was delivered of a dead child. Her recovery was perfect.

Exclusive of the two principal objections which have been urged against the rupture of the membranes, there is also a third, the uncertainty of the time when labour pains will ensue. Admitting this, I can confidently declare, that in every instance (now a considerable number), except one, in which I have resorted to the operation, it has been eminently successful, in conjunction with the employment of friction, the firm application of a bandage, and, (when necessary to the free evacuation of the fluid), raising the head of the child. The hemorrhage was in every instance arrested, and delivery was accomplished by the natural powers. Although in several of these instances pains did not arise for some hours the passive contraction speedily took place, by which the uterus became much firmer, as was manifest on placing the hand over the abdomen.

After employing the ordinary treatment until relaxation of the os uteri has commenced, Dr. Merriman, in conformity with the directions of M. Puzos, lays much stress upon *continuing* the artificial dilatation of the os uteri, in order to excite or increase the parturient action, and expedite the delivery. Puzos designates this plan, under weak labour

pains, as the happy medium between natural and forcible delivery. Possibly it may be needful to attend to this, although I have seldom found it necessary. Previous to the membranes being ruptured in hemorrhages occurring about the end of gestation, the practitioner should institute a very careful examination, with the view of ascertaining whether the placental site is not lower than usual, although no part of the mass may occupy the mouth or inferior part of the neck of the womb. This proved to be the case in the instance referred to of failure of this operation. It can scarcely, therefore, be considered an exception. As the case possesses interest, I shall briefly detail it.—Mrs. Stanton, nearly fifty years of age, and of feeble constitution, was seized suddenly on Sunday morning, 13th June, 1830, with a violent flooding. It is calculated that she lost three pints of blood in less than an hour. It was her first pregnancy. The os uteri was sufficiently dilated to admit the finger, and as the hemorrhage continued, accompanied with a strong convulsion, the membranes were ruptured. The uterus became fully dilated, and the head was speedily in the pelvic cavity. An unfavorable change, however, occurred. At ten the same night, the pains subsided; a quantity of blood was discharged whenever an examination was made, and exhaustion was increasing. It was thought right to deliver; but, in attempting to apply the forceps, the convulsion recurred with so much violence, and produced so much exhaustion, that we abandoned our intention, and prescribed a large dose of opium. At ten the next morning, as there was no improvement, and as we had a strong conviction that the child was dead, we perforated the cranium, and delivered. The placenta evinced no disposition to separate, hemorrhage was coming on, and, therefore, after waiting as long as appeared safe, the hand was passed in utero. Although a portion had separated before labour ensued,

the bulk of the mass was morbidly adherent to the upper part of the cervix uteri. It could not be detached for a length of time, and was brought away after a tedious process. The hemorrhage now increased, and as expansion of the uterus was taking place, my colleague Mr. Ryland, whose patient she was, again passed his hand in utero, and retained it *two hours*, before perfect contraction took place. The patient quite recovered.

In dangerous hemorrhages, then, of the accidental class, which resist approved physical treatment, we must seek to produce the contractions of the womb, either in their passive or active form, so as to constringe the ends of the detached vessels, and prevent further effusion, at least in any hurtful degree. For this purpose, the means recommended in this chapter must be cautiously pursued; and if the hemorrhage is found to continue, delivery must be accomplished, by turning the child, should the head be situated above the brim, and by the aid of the long or short forceps, should it be entering into, or already below, the brim. A proceeding analogous to this, the most rational plan that can be devised, is recommended by Baudeloque. We perceive, therefore, that though the least considerable of these hemorrhages may be stayed by the formation of coagula whilst gestation proceeds unimpaired, the more important effusions will not cease until the liquor amnii is discharged, and even in some cases until the contents of the uterus have been wholly evacuated. These last mentioned cases so rarely occur, that they afford no solid objection to our grand resource, viz. the rupture of the membranes, and the other subordinate means calculated to stimulate the uterus to an active contraction.

II. The propriety of using the plug in these hemorrhages

is the second point in dispute. That the tampon, when properly applied, will staunch the flow of blood, either permanently, or, at all events, until the os uteri has become sufficiently relaxed safely to admit of delivery, cannot be doubted. It is objected to, however, under an apprehension that blood may accumulate in the uterus. Whether an effusion ever occurs so as absolutely to *distend* the uterine parietes generally, is only matter of conjecture. The state of the womb, independently of its elasticity, may certainly admit of a material effusion within its cavity. "We are apt," says Dr. Hunter, "to consider the uterus, when containing the fœtus and membranes, as being tight and distended, so as to preserve its shape if taken out of the body; sometimes it may be so; but in the state in which it generally is at the ninth month, it will hold a pint, a quart, or now and then two quarts, or even more. It is rather in a loose state, not quite tight, and only about three parts full."* This statement must of course refer to the period antecedent to the shortening of the uterine fibres, on the accession of labour. Ramsbotham, on the contrary, attributes the flaccidity referred to by Dr. Hunter, to a loss of tone consequent on death, and asserts, that "during life, the uterine parietes are in close contact with their contents, without any actual compression."† Dr. Ramsbotham is somewhat in error. Although the membranes are in close contact with the uterine surface, the sac containing the fluid is partially flaccid, even during life. In the inferior animals, this admits of positive demonstration. Again, in the human female, the membranes, whilst at no time distended, contain in the early periods, a larger quantity of fluid in proportion to the bulk of the uterus and the delicacy of the fœtal structure, than afterwards:—still, the cavity is

* MSS. Lectures. † Practical Observations, p. 14.

more completely occupied at the close than at the beginning or middle periods of pregnancy. Very recently, I had an opportunity of inspecting the gravid uterus of a woman who died of inflammation of the lungs at the ninth month of pregnancy, and I am convinced the membranes would have contained an additional quart of fluid. Blood, therefore, *may* accumulate. Denman, who denies that the uterus is ever in a state of distension, alludes to blood being locked up beyond the child.* Barlow refers to blood being effused between the membranes and the parietes of the uterus in gestation ;† and Merriman speaks of a sanguineous effusion in the space between the uterus and placenta, sufficient to produce death, when there is little discharge externally.‡ In a case in which a friend of mine judged it necessary to turn the child, the accumulation was found to be very considerable. Dewees, Capuron, and others, under the impression that the uterus resists encroachment after the seventh month, deny the existence of a concealed hemorrhage, whilst the child is in utero. M. Duges also, who advises the plug when the dilatation is insufficient, is equally in error when he states, that the uterus resists distension "when filled with the products of conception;"§ since, we have already shewn, the uterus is not absolutely filled at any period of gestation even up to the ninth month. M. Duges quotes, as his authority, the treatise of Madame Burgeois, who, in advising the tampon to be employed whilst the cervix uteri remains in a state of rigidity, appears to have been mainly influenced by the sentiments of M. Gardien. These authors not only deny that the gravid uterus admits of distension by effused blood (at least in any material degree), but

* Introduction to Midwifery, vol. ii. p. 301.
† Barlow's Essays, p. 229.
‡ Merriman's Synopsis, p. 120.
§ Manuel d'Obstetrique, deuxieme edition, p. 230.

also assert that the blood, if extravasated, would act beneficially, by exciting the organ to contraction—an event possible indeed, but no man would be justified in relying upon it. It appears to me, that a far greater risk must attach to the use of the plug, in those severe cases of accidental hemorrhage which depend upon an actual separation of the placenta, than from its application when the placenta is connected with the os uteri.

In employing the tampon under rigidity of the os uteri, a two fold object is proposed, viz. to arrest the hemorrhage, and to procure the necessary degree of relaxation. The plug, when used early, and whilst the detachment is inconsiderable, may produce either a permanent effect, so that on its removal the hemorrhage shall not recur, or otherwise, a temporary benefit, arresting the discharge during the time of its application only. In the one case, we shall have gained an advantage beyond our expectations; in the other, we shall have attained the immediate object we had in view. It has been already remarked, that the effusion proceeds from the large vessels in connexion with the placenta on the one hand, and the small vessels in connexion with the decidua and membranes on the other. In reference to the more important effusion, it must be recollected, that before the blood can escape through the os internum, it must, in travelling from the placenta, have detached the membranes throughout their whole extent. Under this form of hemorrhage, therefore, coagulation is directly promoted, and if the action of the womb be feeble, blood may possibly accumulate to an amount destructive to life; otherwise, when the energies of the uterus and the general system are previously unimpaired, a pound or even two pounds of blood may be effused without danger. When the effusion proceeds from the small deciduous vessels

about the cervix uteri, there will be little risk of accumulation. But since we cannot distinguish the placental from the deciduous hemorrhage, by any other than presumptive symptoms, we ought never to employ the plug unless under a most pressing necessity, and with the utmost circumspection. For, although an effusion of blood in the gravid uterus very rarely occurs, the mere fact that it really does happen, must be present to our minds whenever we venture to use the plug. Whilst, therefore, I am not prepared to say that the plug ought never to be used in these effusions, the necessity for its application will very seldom arise. I have never yet met with a case in which the os internum did not soon become sufficiently relaxed to admit of the membranes being ruptured. In the event, however, of the plug being used, no man can be justified in quitting his patient during the time of its application; rather he should exercise more than ordinary vigilance, in observing the pulse and general system, in order to detect a concealed hemorrhage, should it by possibility arise. It is proposed also to employ the tampon during a state of dangerous collapse, when a copious draining, not an active hemorrhage, is present, at which time delivery would be exceedingly perilous. Its application at such a moment, whether attended with risk or not, would be far less hazardous than that of delivery by turning. During its employment, the abdomen must be firmly compressed by means of a proper bandage.

Hemorrhage arising *during labour* is mostly occasioned by a partial detachment of the placenta. Usually, the blood escapes externally, but when it is effused between the surface of the womb and the investing membranes, and does not wholly pass through the os uteri, being thus disguised, the practitioner is liable to much embarrassment. In these obscure cases, the internal and external hemorrhage may be

proportionate to each other or not, since the blood may be largely effused in the uterus generally, and yet attended externally either with a trifling discharge or with none at all. Although no mechanical impediment, in reference to the os internum itself, may prevent its escape, the blood may be effused so slowly, as to admit the formation of a large coagulum, which under an impaired state of the nervous energies, may not be expelled; and even if the blood be liquid, the os uteri may still be so effectually plugged up with mucus as to oppose its escape. It cannot be denied that sudden deaths, occurring in advanced pregnancy, without any external issue of blood, correspond not only with detachment of the placenta, but with laceration of the mass also; the blood being thus permitted to accumulate in a considerable quantity. Under the rupture of a central vessel, the placenta has been found so much detached, and forced inwards, from its corresponding uterine surface, as to enclose at least two pounds of blood, and as the effusion is bounded by the edges of the mass, which still adhere, it cannot escape into the general uterine cavity. My friend Mr. J. M. Coley, a most intelligent and judicious practitioner at Bridgnorth, in a case of this description, with great presence and determination of mind, passed his hand in utero, and by delivering his patient, saved her from almost certain destruction.*

Burns observes, that when the placenta is separated from the fundus uteri, "the blood may be confined, especially if the separation have been trifling, and a coagulum will be formed, exterior to the membranes: the lower part of which will still adhere to the uterus; or if the central portion of the placenta have been detached, a collection of blood may be formed behind it, but may not extend beyond its circular

* This very instructive and highly creditable case will be found in No. 332 of the Lancet.

margin."* The Professor then refers to cases of this latter kind, related by Baudeloque, "in one of which the womb was considerably distended," but delivery did not save the patient. Albinus also mentions a case, "where only the central part of the placenta being loosened, a large quantity of coagulated blood was lodged between it and the uterus, as it were, in a bag; and consequently, not a drop was externally discharged, so as to foretell the danger."†

Hemorrhages of this class, when occurring under a state of constitutional debility, are calculated to produce the most alarming symptoms. A case is narrated of rupture of the placenta, in which death took place six hours after the symptoms of collapse had commenced, and on post mortem examination, there was found "a large coagulum at the anterior portion of the fundus uteri, weighing eighteen ounces: the rupture of the placenta two and a half inches long, and at its lateral portion."‡ These observations respecting large accumulations of blood in the uterus, when there is little or no external discharge, obtains confirmation from the following detail. On inspecting the gravid uterus of a cat, supposed to have died under the expulsive efforts, the cornua presented a complete contrast in their appearance; the left being naturally white, except where the vessels ramified over its surface; the right being black throughout, and distended by a quantity of dark liquid blood, found to have proceeded from an extensive laceration of the placenta. Though the hemorrhage proved fatal, not a drop of blood had escaped externally.

* On Uterine Hemorrhage, p. 9 and 10.
† Leake's Practical Observations, p. 276.
‡ North of England Med. and Surg. Journal, No. 4 p. 446.

The diagnosis of an internal hemorrhage occurring before delivery, is confessedly difficult. This state may be inferred, (for we have no positive evidence on which implicit reliance can be placed), from the constitutional symptoms, to which our attention must be mainly directed, and from the uterine tumour presenting an irregular form, in consequence of a portion of the organ becoming so elevated as to be apparent externally. With respect, however, to the external appearance, it is obvious that we are liable to much deception; but when this appearance is associated with the constitutional symptoms, and when the attack occurs, perhaps suddenly, during the labour, and without any directly assignable cause, we may fairly presume that internal hemorrhage is going on. Of these internal symptoms, we may instance a sense of exhaustion, cessation of pain, sinking of the pulse, prolonged faintness, coldness of the body, vomiting, and a continued and increasing depression of the vital powers; in other words, if we recognize the signs of hemorrhage in general, an aneurism for example, (as cited by Dr. Blundell), without any external issue of blood, we shall be quite justified in passing the hand in utero, (provided it can be done without great violence), and accomplishing delivery.

The danger of a forced delivery during a state of exhaustion, is spoken of in the succeeding chapter. I need only observe here, that in accidental hemorrhages, attended with collapse of the system, the rupture of the membranes* is entirely exempt from the risk, which, under such circumstances, is inseparable from the operation of turning.

* In speaking of the rupture of the membranes at the bottom of page 129, I ought to have added that Dr. Merriman advises us to increase the dilatation of the os uteri by means of the finger both previously and subsequently to the evacuation of the waters, which should be effected during a pain.

CHAPTER XVI.

UNAVOIDABLE HEMORRHAGE.

Unavoidable hemorrhage implies a separation of the placenta, when it is affixed over the inferior part of the womb—the relative position of the placenta and uterus being preserved in the early months of pregnancy only. In the site of the placenta, nature observes no uniformity. In a great proportion of cases, it is attached to a part of the uterine cavity to which it bears a corresponding and progressive developement, but which does not dilate during labour. In the class of hemorrhages last considered, and depending upon different causes, under proper management, the effusion may cease, the vessels remaining closed, and gestation proceeding without further interruption. Artificial delivery, therefore, so far from being regarded as a necessary consequence, is had recourse to only after the failure of all other resources. In the unavoidable form of flooding, the patient is necessarily exposed to danger of a *peculiar* kind, imminent in degree, involving the deepest responsibility, and demanding the exercise of the highest judgment; and although, during syncope, or extreme depression of the system, the more active discharge will be arrested, it will inevitably recur under an improved state of the circulation, and not finally cease, unless by the timely evacuation of the ovum.

To enter into an historical account of these hemorrhages, or to subjoin a list of common cases, would be superfluous; since the excellent treatise of Rigby, which established the

proper mode of practice, though imperfect in several respects, contains much practical information upon the subject, and ought to be in the hands of every person professing the obstetric art. Merriman has ably corroborated the chief positions there advanced. Before the fifth month of pregnancy, the developement of the uterus is confined to its fundus and body; but after the fifth month, the distending power of the ovum is exerted upon the neck of the organ, which dilates circularly from above — and at last a change is wrought upon the os internum. As the growth of the placenta, under this attachment, does not keep pace with the progressive unfolding of the cervix uteri, hemorrhage will necessarily result, at any period after the fifth month is completed up to the accession of labour, arising earlier or later according to the precise situation of the mass.* In persons who have borne many children, the neck of the uterus has been observed, in some instances, to shorten as early as the fourth month; it is obvious that a detachment may happen even at that early period. It has been known to occur as early as the third month.

It would appear, then, that this part of the mass will be withdrawn from its attachment, in exact proportion to the developement of the cervical part of the uterus, and the vicinity of the margin of the placenta to the os internum. And thus, the placenta will undergo a continuous separation correspond-

* It is difficult to explain why in persons having once been the subject of it, prœternatural or complex labour should frequently occur. I have delivered a poor woman in three successive pregnancies with placenta presentation; and I am acquainted with a lady who has given birth to twelve living children, including ten prœternatural presentations and only two natural ones. A professional friend, in the case of one of his patients, has turned the child in six prœternatural labours in succession. He has delivered another patient seventeen times without meeting with the slightest deviation from nature.

ing to the successive expansion of the neck, until nearly the whole of its surface is dissevered from its uterine connexion. From this it is evident, that when the placenta is affixed either to the cervix or to the os uteri, whether wholly or partially, the vessels will become exposed on each successive detachment, and the ultimate safety of the patient will depend upon delivery by turning the child, excepting, perhaps, in two peculiar states, (to be alluded to presently), in which rupture of the membranes is the only treatment offered to us in one case, and the safest, and therefore the most eligible in the other. In a few isolated cases, occurring in persons of very robust constitution, the uterus has been known to acquire a degree of contraction sufficiently vigorous to expel its contents with safety to the patient, and without the interposition of art. A contraction short of this must always be injurious. The placenta may even undergo total detachment, and still the child may be expelled by the natural efforts. Smellie gives us several cases. In one instance of this kind, while the practitioner was preparing to deliver, the whole placenta was expelled first, and instantaneously followed by the child. Such an occurrence, however, is too rare to justify our placing any dependence upon it. Instead of the womb being sufficiently active to expel its contents, its energies are usually so much impaired, if not completely paralyzed, by repeated hemorrhage, that when committed to nature, the result has almost invariably been fatal.

The examination per vaginam should be made with the utmost accuracy. The mode of placentar presentation may be either general, the body being attached over the whole disk of the os internum, or partial, an edge only of the mass occupying the inferior part of the womb. In the first case, we readily obtain every requisite information. The neck

appears unusually thick, and the fœtal head, which, in natural presentation, ought to be resting over the ossa pubis, is either not felt, in consequence of the placenta thus intervening, or felt indistinctly. The membranes will not be distinguished, at least when the centre of the placenta is over the os uteri, until the dilatation is incompatible with life. In the second case, the finger should be carried quite within and round the whole circumference of the disk. But in this partial attachment, the great bulk of the placenta may be connected with the body of the uterus, and its margin only occupy the *superior* portion of the cervix—so that, in order to acquire correct information, or even to reach the loosened part, it may be needful to introduce the hand into the vagina, and the whole length of the finger through the os uteri. Again, the neck and about a third part of the os uteri may be the seat of placental attachment. Under this partial implantation, in some instances the margin of the placenta and the membranes (or only the edge of the membranes thicker than usual) may be felt simultaneously, As respects the placenta, we may observe a rough, granular, and spongy substance, the surface irregular, perhaps slightly lobulated, covered frequently with a thick coagulum of blood, which it may be necessary to penetrate before we can correctly determine the actual presentation.* A number of small coagula sometimes surround the cervical portion of the womb. It is said that a sanguineous effusion has been observed in the liquor amnii. This must presuppose rupture of a vessel of the fœtal part of the placenta. In such cases

* In our examination of cases of accidental and unavoidable hemorrhages, we are told that the smoothness of the coagulum in the one case will distinguish it from the granular and firm feel of the placenta in the other.† There is sometimes so much extravasation within the substance of the placenta and also over its presenting surface, which is frequently covered with a "black lamellar coagulum," as to occasion considerable deception on this point.

† Waller's Elements, p. 73.

a mistake may probably arise from the waters, during their escape, becoming tinged with the discharges from the lower part of the uterus and the vagina.

A sudden and copious flow of blood appearing about the sixth month of gestation, issuing in gushes, frequent in return, and occurring at intervals, with intermediate drainings, is one of the characteristics of this description of hemorrhage, and ceases on coagula forming within the vessels, in the vagina, or within the circle of the os uteri. The return of the *active* effusion varies in frequency from a few hours to a few days, and corresponds with the progressive developement of the several portions of the cervix, and the vigour of the general circulation. Usually, however, the hemorrhage recurs with increased frequency, as well as in greater profusion, until at length there is a very inconsiderable interval between the termination of one flooding and the beginning of another. The discharge, in consequence of its more ready escape from the uterus, is said to be more florid and fluid in this than in the accidental species of flooding. If the blood does not escape direct into the vagina,* the impediment to its flow is still so inconsiderable that time does not allow of coagulation taking place until the current has abated. The mode in which the effusion passes externally is not always the same. When the patient is in the erect position, the blood has been known to escape on the floor very audibly; but in the recumbent position of the body, a severe hemorrhage may happen under very deceptive circumstances. In a case already alluded to, the practitioner, who had been in attendance the whole of the night, was aware of a progressive exhaustion, but unconscious of the cause. When I saw the

* I have found the disunited portion of the placenta pass into the vagina. Wrisberg alludes to the partial attachment of the placenta to the vagina.

patient, about nine o'clock in the morning, I was told there had been no hemorrhage; but on moving her from the spot on which she lay, the bedding was found absolutely saturated with blood. It appeared to have flowed over the patient's left thigh, and thence on to the bed, thus concealing the real cause of danger from the parties in attendance. The patient expired soon after delivery. This is not the first case I have known, in which a large mass of blood has been accumulated on the bed, in the hollow surrounding and underneath the spot on which the patient lay, when flooding was not even suspected. This species of hemorrhage is a source of much danger both prior and subsequent to delivery. When the napkin is not applied close to the vulva, it scarcely acquires any soil, and the practitioner is deceived and embarrassed. Even when the vagina is partly occupied by a coagulum, liquid blood may pass by its side to an amount that shall reduce the patient to a state of imminent peril. The observing practitioner will be upon his guard against every possible source of danger, although it may impose upon him the office of nurse, as well as that of accoucheur. The student in midwifery, too, will learn how important it is, when a patient labours under symptoms of an active hemorrhage, to examine not only the pulse and countenance, but the clothes and bedding also. The quantity of blood discharged is a most fallacious criterion. Our judgment ought rather to be influenced by the impression made upon the system.

In treating these cases, two plans are proposed; first, to check the flow of blood, and secondly, to promote delivery. Our first duty obviously is to restrain the violence of the effusion. But how is this to be effected? This, it may be answered, must depend upon circumstances, and will be mainly influenced by the effects which the hemorrhage shall have

produced upon the system. The primary attack seldom occasions a serious impression. Under a copious and sudden effusion, it may be otherwise; for the first hemorrhage has been known to depress the vital powers to an alarming degree, though the system may sustain a gradual draining with comparative immunity from danger. Our attention is chiefly to be directed to the state of the circulation. Important as it is to diminish an increased action of the blood vessels, venesection is rarely admissible in these cases, unless the patient be very plethoric, and the system materially excited. At the commencement of the hemorrhage, the treatment should comprise perfect repose, the recumbent position on a hair mattress, a cool and simple regimen, small doses of neutral salts with nitrate of potash, and the application of cold. The bowels must be regulated by the mildest laxatives or injections, since active purging, or whatever occasions straining, may displace the coagula, and renew the hemorrhage. The apartment should be kept airy, the patient lightly covered, and the pelvis moderately elevated. Under much debility, we may administer small doses of opium, which, Burns tells us, "will check the discharge." This treatment must generally speaking, be pursued until delivery is accomplished.

A most important question here arises, at what time ought delivery to be undertaken? This is indeed a very nice and delicate point to determine, and a trial of the practitioner's ability.* In deciding this question, his judgment should be regulated by the amount of hemorrhage, the frequency and suddenness of its return, and especially by its effects upon

* Gooch instances three practitioners, each of whom having lost patients by delivering too early, fell into the opposite error, and consequently met with the same disaster by postponing the operation too long. Skinner's Compendium, p. 252.

the general system. In addition to this, we must in some measure be guided by the state of the uterus: for although it may be very little dilated, a disposition or capability of dilatation is early acquired: a complete dilatation, so far from desirable, might prove fatal, in consequence of the copious discharges which attend the dilating process. A forcible entrance into the uterus, whilst its orifice is rigid, is never to be justified. If any error in the selection of the time were committed, far better would it be that delivery should be performed too soon than too late. A *moderate* degree of opposition is to be wished for: by waiting until the os uteri is so loose and flabby, or so far open, as to offer no resistance to passing the hand, the chances of delivery being successful will be materially diminished. If the os internum be tolerably soft, and dilated to the size of half a crown, or, what is of far more importance, soft, thin, and dilatable sufficiently to admit the finger easily, the operation may be attempted. On gently passing the ends of the fingers in succession, and in a conical form, we quickly ascertain the degree of resistance. By pausing a little, if needful, relaxation may follow; if not, the hand must be withdrawn, and the attempt renewed at the proper time.

The tendency of all material discharges of blood during gestation, is to provoke more or less of muscular contraction, of which pain is an evidence. Pain, efficacious as it is in the accidental form of hemorrhage, unless adequate to the expulsion of the child, is neither to be expected nor yet desired, to any material extent, in the unavoidable form, as it only renders the effusion more abundant. For, though a certain degree of relaxation is necessary for delivery, it must be remembered, that in exact ratio as the cervix uteri is successively developed, and the os internum progressively dilated,

will an additional mass of placenta be detached from its connecting medium and hemorrhage necessarily be renewed. In proportion, therefore, as the effusion has been copious, will the uterus be deprived of its contractility; consequently there will be little or no pain. My practice has furnished me with a considerable number of cases of this nature; and with two exceptions only, delivery proved successful. These operations were performed under the most auspicious circumstances. The hemorrhage had sufficiently relaxed the os uteri without having reduced the vital powers too low to sustain the necessary efforts of delivery. A very experienced accoucheur, in whose practice about twenty cases of this description have occurred, informs me that those women who were delivered at an early period of gestation, recovered, but when delivery was postponed to a late period, the result was fatal. Similar answers have been given to the same enquiry by other gentlemen. Whilst the first changes on the os uteri are progressing, in order to embrace the most favorable moment for delivery, the practitioner must on no account quit the patient long together. The contraction of the longitudinal fibres may be too feeble to overcome the resistance of the circular fibres, until, under a frightful hemorrhage, the os uteri has very suddenly acquired relaxation, and in the absence of competent assistance, the patient has been known to sink in a very unexpected manner. It is in this description of cases that death is said to have occurred whilst the uterus has retained its rigidity; or, to speak more correctly, relaxation did not take place until very shortly before death. The practitioner's vigilance, then, must be proportionate to the urgency of the case, and his examinations must be frequent, (care being taken not to disturb any coagulum which may have formed); for as soon as the requisite degree of relaxation is obtained, we have nothing further to gain by delay, but every thing to

lose. Delay cannot, indeed, be too strenuously reprobated. To the loss of half an hour, moments which cannot be redeemed, the unsuccessful issue of many cases may be fairly ascribed. We also incur the risk of the patient dying undelivered, a result which occurred recently in a case which has come to my knowledge. The interests of the child are very properly considered, in this country at least, subordinate to those of the parent: it must nevertheless be allowed that on the child's account,* delivery should never be postponed, when it can be undertaken with safety to the mother. In the case now supposed, there is a reciprocity of interest in favour of immediate delivery, the advantage alike of the parent and the child being involved in it.

But how are we to proceed under peculiar conditions of the uterus and the general system, at a time when delivery cannot safely be undertaken? For, if there be a time when turning may be effected under propitious circumstances, there is also a time when it would be attended with great danger to life. Two states may render immediate delivery inexpedient,

* The death of the child is usually attributed to an exsanguine state of its own system. This cannot be correct, since the fœtal vessels have been found well supplied with blood in cases in which the maternal system, under renewed hemorrhages, has been absolutely drained. The fœtus, therefore, must perish from the want of those changes in the utero-placental circulation, which *in some measure* resemble the pulmonary function, and, consequently, from asphyxia. I am persuaded that the resuscitating process is seldom persisted in sufficiently long to restore the powers of life when nearly extinct. On two occasions, assisted by other gentlemen, I succeeded in restoring animation after the process had been continued fifty minutes in the one instance, and fifty-five minutes in the other. The first case was connected with a tedious labour only; the second with artificial delivery in a placenta presentation. Le Gallois, after decapitating a rabbit, and securing the large vessels of the neck, was enabled by artificial respiration both to renew, and support the action of the heart and arteries for the space of three hours. What stronger proof can be adduced of the efficacy of inflating the air vessels?

rigidity of the os uteri, and a state of collapse. If the operation is had recourse to whilst the uterine orifice is rigid and unyielding, the violence almost necessarily employed, will probably be succeeded either by laceration, dangerous contusion, inflammation, or some other unfavorable event, especially in a first pregnancy. On the other hand, if we wait too long, the hemorrhage may have depressed the vital powers so dangerously, that the system shall either not sustain the efforts of actual delivery, or not admit of an efficient reaction. In these states, two principal modes of treatment are offered for our consideration, the application of the plug, and the rupture of the membranes. A third is suggested for cases of collapse, viz. transfusion of blood.

As regards the first mentioned state, it may be enquired, can the plug be beneficially employed, especially about the sixth and seventh month, when the hemorrhage is profuse, and yet the os uteri not sufficiently lax to admit of delivery? It is true, that under a copious hemorrhage, the uterus early acquires dilatability, and also, that when the organ cannot be dilated without violence, blood will rarely have been lost in such quantities as to place the patient in immediate danger. Still it may be otherwise; for cases, however rare, do really occur, which prove the exception, and the management of which is attended with very painful embarrassment. If the plug is a safe remedy, it cannot be denied that it is more desirable for relaxation to be produced gradually under its application, than suddenly under an hemorrhage, the violence of which might possibly endanger life. Cusack, speaking of an instance of complete presentation of the placenta, in which the delivery was ultimately performed by turning, observes, "the most remarkable feature in this case was the great advantage found to arise by plugging the vagina; the os uteri

seeming in the first instance too rigid to allow of turning being performed with safety to the patient."* It is maintained, however, by some authors, that it cannot with safety be applied in the last months of gestation. Burns and Dewees, who strongly recommend the plug in the state here contemplated, are in this instance opposed to Dr. Merriman, an author to whom every deference is due, and who considers it as inapplicable when the bulk of the uterus exceeds a three or four months pregnancy. He states, that in unavoidable hemorrhage, coagula collect in large quantities in the uterine cavity.† This in itself would constitute an objection to the plug; although blood proceeding from the neck of the womb is less liable to accumulate than if the effusion issued from the vessels at the fundus. The occurrence is certainly very rare, and cannot take place to any extent, unless under a most defective degree of contractility, and extreme depression of the vital powers. It may however occur, even under the attachment of the placenta to the cervix uteri, as in the annexed case.—A woman, in the sixth month of pregnancy, was seized with violent pains in the abdomen, accompanied by a *trivial* discharge of blood. During three days, the pain, which came on at intervals, continued augmenting in severity, and was each time completely relieved by the expulsion of coagula. On the evening of the third day, the hemorrhage became most violent, the pulse was unusually feverish and frequent, the os uteri was somewhat dilated, and the placenta was felt lying a little beyond it, almost totally detached, and so soft as to resemble a clot of blood. The membranes, which could be felt by the finger, were ruptured, and the waters discharged; but the uterus was not sufficiently developed to admit the hand.

* Dublin Hospital Reports, vol. 5, p. 515. † Synopsis, p. 134.

The attempt to pass it was succeeded by a degree of contraction so forcible as to expel the child and placenta together. The next day, the small pox appeared on the body of the patient. It must be allowed that other disadvantages may attend the use of the plug. When the detached portion is very circumscribed and close to the os uteri, it is certainly possible to staunch the blood by making pressure over the exposed surface, as suggested by Baudeloque, and thus avoid the slightest risk of hemorrhage, unless a further detachment should ensue: otherwise, the plug can only act on the vessels by the formation of clots. This, in other cases, *possibly* may prove of permanent benefit, since there is a chance of the hemorrhage not recurring. It is very different here; for as the uterus undergoes its further developement, or as its contractions ensue, which the plug may provoke, a renewed effusion is inevitable. But the chief objection to the use of the plug arises from the necessity there is of making frequent examinations, in order to discover whether a degree of relaxation sufficient to authorize delivery has been obtained. By disturbing the plug and the clots which adhere to it, the bleeding will in all probability recur, and continue until the plug is replaced. With these facts before us, are we justified in employing the plug in this presentation, the os uteri being rigid, and the patient ill calculated to sustain any additional loss of blood? I must admit that this state has never occurred in my practice: but with the knowledge that such instances do really occur, and anxious to provide for the emergency, I have been favored with the opinion of two of the most eminent authorities on these subjects in the present day, Sir C. M. Clarke and Dr. Blundell. Dr. Clarke, who does not seem to be apprehensive of its occasioning an internal hemorrhage, is, notwithstanding, opposed to the principle of using the plug when any thing remains in the uterus to be

brought away; he regards the practice as in itself unscientific, a half and uncertain measure when decision and action are indispensable, and would seek to procure contraction by the only certain means. This eminent man, who always delivers as early as possible, never lost a patient in this presentation. Dr. Blundell, on the other hand, averse as he has often declared himself to be to officious midwifery, would not hesitate to plug either in general or partial placentar presentation, "provided, (as he observes), the os uteri were rigid, and the gushing or draining seemed to require the remedy," doubtless from the impression the loss shall have made upon the system. "Repeated deaths from placentar presentation prove that the unaided powers cannot be depended upon in all cases, whilst we are waiting for relaxation." Burns, favorable as he is to the employment of the plug, alleges nevertheless, that under a very profuse hemorrhage, it ought not to be used; but the excess of the effusion is surely one of the strongest reasons for its employment. The Professor meant probably that under a very profuse hemorrhage, the degree of relaxation requisite for delivery would soon be obtained, and thus supersede the plug. To the country practitioner, residing, as he frequently does, several miles from his patient, it is of no slight importance to determine whether the plug can be applied with safety until this dilatability is acquired.

Let us now consider what practice ought to be pursued in cases of very formidable exhaustion. Since it is not unusual to hear of patients dying within an hour after delivery, the propriety of the measure, both as respects time and circumstances, may justly admit of question. In recording individual experience, faithfulness is a duty of the first obligation, and under this impression, I confess I feel doubtful whether, in the state of exhaustion to which the patients in

the unsuccessful instances I have alluded to were reduced, a different proceeding might not have proved more auspicious. Whilst flooding continues, the practitioner has but one duty to perform, viz. to deliver; but, when coldness of the skin, a pulse scarcely perceptible, (associated perhaps with vomiting), and a countenance denoting excessive exhaustion, supervene upon an hemorrhage that has temporarily ceased, a mere draining going on, such a moment is ill adapted for turning the child. There is an axiom in midwifery, that no woman should be suffered to die undelivered. I assent to this as a general rule; at the same time, its rigid enforcement during a state of collapse, fairly admits of question—the mere bodily disturbance has too often proved fatal. Painful as it must be to witness the death of a woman in parturition *undelivered*, the calamity would be equally distressing, (except so far as the child is concerned), immediately after delivery. The former case is of very rare occurrence; the latter has very frequently happened. The only instance that has come to my knowledge of a patient dying undelivered under placentar presentation, has been already alluded to. But, since principles ought always to influence our conduct, the practitioner probably acted wisely in not attempting delivery; as when he was called in, the pulse was scarcely perceptible, and the patient died before he left the house. Such a case as this must have been peculiarly calculated for the performance of transfusion. Rather than deliver under collapse, we ought to occupy ourselves in administering stimuli and cordials, promoting animal heat, perhaps performing transfusion, carefully watching the effects of re-action, and holding ourselves in readiness to deliver on the recurrence of bleeding, or, if the tampon be employed, as early as the patient's strength will allow. This line of practice I conceive to be strictly consonant both with reason and experience. Can the tampon

be advised in cases of this description, and upon what principle? This is the grand practical question. That it is very material under a dangerous collapse to excite the action of the womb, admits of no doubt. The object of the tampon, however, is rather to command the copious draining, until the system begins to rally, and will justify the operation of turning. We may well consider, whether, by employing it with a view of promoting an active contraction, we shall not incur a more extensive detachment of the placenta. "In general," says Dr. Blundell, "when women are lying in a state approaching asphyxia, the flow of blood is so exceedingly small, that a check is scarcely required—nevertheless, as drachms become at last of importance, I should not hesitate to plug, if I could, by so doing, effectually stop the hemorrhage, and favor the formation of clots. These small drainings will not, I conceive, give rise to internal bleedings of danger, and the plug could not be in the way, because it is not by repeatedly examining on these occasions, we learn when we are to deliver, but by observing the pulse, heat, muscular strength, and in short those symptoms which indicate that rally which will give probable safety to the delivery." Should the tampon be employed in the state here contemplated, the practitioner must impose a very vigilant watch over the system, in order to deliver the earliest moment the strength will permit. I cannot but think that, under the precautions already specified, the risk of blood collecting in the uterus is more than counterbalanced by the necessity for giving an immediate check to the drainings, which the plug promises to effect; and that the mere possibility of an internal hemorrhage is scarcely a sufficient reason why we should surrender the advantages which we know to accrue from its judicious application. In the words of Capuron, "Admitting even that the plug be a doubtful remedy, is it not more

rational to attempt it, than to confine ourself to the part of a simple spectator, in a conjuncture so important and dangerous."* Influenced by a similar feeling, Mr. Grainger, of this town, on visiting a poor woman with placenta presentation, and apparently in a moribund condition, immediately filled the vagina and os uteri with linen cloths, and waited TWO DAYS before he durst hazard delivery, which he then accomplished with an auspicious result. Under a reasonable presumption that the patient has strength to sustain the shock of delivery, the interests of the child will demand the prompt evacuation of the womb, unless, indeed, it should appear, from incontestible evidence, that fœtal life is extinct —a proof difficult to obtain. But when the exhaustion is extreme, this consideration must have no weight. The exercise of a nice and conscientious discernment is peculiarly required in these responsible and unsettled points of obstetricism.

In unavoidable flooding, occurring near the full term of utero gestation, a considerable part of the os internum being occupied by the placenta, the rupture of the membranes, as a rule of practice, is quite inadmissible. But the effusion may arise in the middle period of pregnancy; and the rupture of the membranes, at any time antecedent to the sixth month, is preferable to the forcible introduction of the hand, and may be recommended with some confidence. The propriety of using the plug until the os uteri is sufficiently relaxed to allow the waters to be evacuated, has been already discussed.

In resolving upon the rupture of the membranes, three points should be considered: the period of pregnancy, the

* Cours D'Accouchemens, p. 340.

state of the os internum, and the nature of the presentation. First. To judge whether the patient has atttained the sixth month, we must determine whether any and what degree of shortening has taken place in the cervix uteri, and whether the elevation of the fundus corresponds, or nearly so, with the umbilicus.* The circumstances attending the last menstrual appearance, comparing them with the changes which succeeded previous conceptions, must also be taken into account. Secondly—the uterine orifice refusing the introduction of the hand, after the hemorrhage has made an impression upon the general system, is a presumption against the sixth month having passed, and vice versa. Thirdly—it is desirable the presentation should be that of the head. Two cases are very briefly detailed. 1. A lady, near the fifth month of pregnancy, was seized with hemorrhage. A mass of placenta nearly surrounded the os internum. The membranes being ruptured, the expulsion of the child and placenta soon followed. 2. A respectable woman was seized with a severe flooding at the sixth month of utero gestation; somewhat less than one half of the os uteri was occupied by placenta, a portion of it being in the vagina. Her medical attendant requested me to see her, and sanction delivery. Turning was attempted, but found impracticable. Having dilated the uterus sufficiently to pass two fingers, I ruptured the membranes in the manner here described.† A large quantity of liquor amnii was dis-

* See Gooch on Diseases of Women, p. 212, and seq.

† In the early months, the head is very buoyant, floating like a cork on water, and the presentation is easily altered. I have known the head presentation converted into the footling, in an attempt to rupture the membranes. The membranes, when very flaccid, may be torn by passing in utero the first and second finger of the left hand, and elevating a portion of the membrane upon the nail of the index finger, gently scratching through, and lacerating it sufficiently by the nail of the second finger: we should then enjoin friction and a bandage, and if necessary, administer the ergot of rye.

charged. Friction and a bandage were then employed. Pain came on in a few minutes, and in an hour the child was expelled footling. Both these patients recovered without the least difficulty.

It has been suggested by several eminent authors, Dr. Francis Ramsbotham especially, that when an edge only of the placenta occupies the os uteri, (including, perhaps, a third or fourth part of the circle), we may rupture the membranes, and trust that the fœtal head, in descending, will exert on the bleeding vessels a degree of pressure sufficient to stay the hemorrhage. Previous to the termination of the sixth month of gestation, the discharge of the waters is our chief resource; but as the full term approaches, we shall not be justified in depending upon any treatment short of the entire evacuation of the uterine contents, provided (as will usually be the case) the patient has strength to sustain the delivery. But supposing, as we are bound to do, that it may be otherwise, and that the practitioner is called in when the flooding has reduced the vital powers to a state of imminent peril, as denoted by the symptoms of collapse previously described, attended with a copious draining, the gushing of blood having ceased with the depressed action of the heart; might not the sudden evacuation of the uterus, in this state of the system, be followed by a fatal result? When life is maintained by so slight a tenure, I ask, what practice ought we to adopt—wait until reaction will justify delivery, or, rupture the membranes? Under an extensive attachment of the placenta to the os internum, I should prefer the former plan; but when the attachment is very circumscribed, as a general rule, the latter. By men whose practice it is to turn the child in all severe hemorrhages, both these rules will, I am aware, be denounced. I hope I fully appreciate the responsibility I

incur. But having witnessed the fatal result of delivery when performed under a state of collapse, and the advantage of waiting for reaction, to have thought and acted otherwise, would have been to have closed my senses against conviction. As respects the rupture of the membranes, suppose it to fail, and the hemorrhage to recur, is it not safer to turn the child when the uterus is moderately contracted, than when greatly expanded? A powerful contraction, such as to render turning difficult, cannot take place *soon* after a state of collapse. In Dr. Cusack's valuable Report of the Wellesley Female Institution, we find the following passage, "Hemorrhage occurred in six cases during labour, caused by the attachment of a small portion of the placenta over the os uteri, and in all it was arrested by the rupture of the membranes, either by the hand or by uterine action."* Blundell also suggests, that when delivery cannot be undertaken with safety, we may rupture the membranes. Whatever practice may be employed, we have a single object in view, namely, to obtain the contractions of the womb by the most safe, and at the same time the most certain means within our power. When the patient's strength will permit, the propriety of direct delivery admits not of question. When otherwise, the membranes must be ruptured. The principles here laid down were applied in the two annexed cases. A woman, in the ninth month of pregnancy, was seized with hemorrhage on Sunday the 20th of December last. During the night of Tuesday, the hemorrhage became excessive, and, though her strength was not dangerously impaired, the pains were very feeble. It was at this period that I visited her, at the instance of the medical attendant, Mr. Edwards. On examination, the os uteri was found to be dilated about the size of a half crown, and soft.

* Dub. Hosp. Reports, vol. v. p. 501.

The bag of waters bulged through the anterior portion of its disk in a lengthened form, leaving full one half of the disk unoccupied. On passing my hand into the vagina, I detected, just above the os uteri, an edge of the placenta considerably detached. Delivery by turning was, therefore, immediately undertaken. The child was still-born; and the border of the placenta, from which the hemorrhage had proceeded, intimately resembled a coagulum of blood. The patient soon recovered.—A woman, who had reached the eighth month of pregnancy, was seized with a violent hemorrhage, subsiding at intervals, but becoming on each return, more excessive, and greatly increased by frequent vomitings. On the fourth day after the seizure, the flooding and sickness having recurred with great aggravation, I was requested to see her. The pulse was thready and frequent, the countenance bleached, the surface of the body cold, and the flooding profuse. On examination, I found the os uteri somewhat dilated, very thin, and an edge of the placenta overhanging its anterior or pubic lip. Immediate delivery being determined upon, I introduced my hand into the vagina; but when my fingers had passed the os internum, the pulse became imperceptible, accompanied with so alarming an exhaustion as to threaten immediate death. Under a conviction of the patient's inability to sustain the delivery, I resolved not to proceed; after a moment's deliberation, I lacerated the membranes extensively, (the head of the fœtus resting on the cervix uteri and pubes), applied a bandage tightly round the abdomen, freely administered brandy, and stimulated the uterus by retaining two fingers within its mouth. Under slight pains, the head rapidly descended to the outlet, but the pains proving inadequate to the expulsion, I completed the delivery by the short forceps. The placenta was quickly disengaged. Its edge, extensively detached and very smooth, had more the

appearance of a coagulum than of placenta. Had the granular diagnostic been relied on, it would rather have passed for extravasated blood than placenta. The patient perfectly recovered. I am persuaded that this woman owes her life to this particular treatment, and that had the attempt to turn been persisted in, the issue would have been fatal. Rigby's twenty-third case is somewhat analogous to the foregoing; but the hemorrhage, in this instance, did not cease on the rupture of the membranes, though turning was not performed.

The applicability of transfusion to floodings before delivery, was surmised by Dr. Blundell, the great reviver of the operation. The supposition has now received the stamp and test of experience; it has been successfully performed in a case of hemorrhage from placental detachment.* It seems that the subject of the case laboured under a degree of exhaustion, which absolutely forbad the operation of turning. Delivery was undertaken as soon as reaction was established, a change which appears to have been materially promoted by the transfusion.

Practitioners are by no means agreed as to the best mode of passing the hand in utero, in a case of presentation of the placenta. When the great bulk of the placenta is directly over the os uteri, we are enjoined to pierce it in the centre. This is an operation which I have never had occasion to resort to, and which has many disadvantages. Dr. Dewees asserts that in the manipulations necessary for this purpose, there is as extensive a separation of the placenta as when the hand is passed between the placenta and uterine surface; and that in the latter case, the presence of the hand will

* Lancet for Feb. 9th, 1828, p. 698.

restrain any hemorrhage which the separation may momentarily occasion. From my own experience, I am persuaded that if the os uteri is not entirely occupied by the placenta, with ordinary adroitness in the delivery, the hand (the left usually is the most convenient) may generally be insinuated between the placenta and uterine surface, commencing where the placenta is most detached, and passed on to the edge of the membranes, without materially separating the medium of connexion, and endangering a sudden hemorrhage. We should in some degree be influenced by the state of the patient. If the vital powers have not been dangerously reduced, we must consider the interests of both parent and child, and pierce the edge of the membranes. If they have, and we fear the consequences of the slightest hemorrhage, our exertions must be directed to the mother alone, and we may, in that case, pierce the placenta. The uterus must be supported by external pressure during the delivery, and when the feet appear at the vulva, it will be prudent to wait for contractions, and consign the expulsion to the natural efforts aided by friction, (unless there be *no* pain, or delay be inadmissible), until the breech is expelled. The interests of the child will then require the delivery to be promptly terminated. Time must be allowed for the uterus to recruit, in order that the placenta may be disengaged. But should hemorrhage arise, the placenta must be speedily removed.

In the puerperal state, the patient must be narrowly watched. When the gushing or draining has continued a considerable period, the stomach being unable to supply sufficient nourishment to counteract the exhaustion, the evils peculiar to large losses of blood frequently ensue. Death has sometimes occurred at a comparatively remote period after

delivery;—in some instances, under an impaired state of the system generally, accompanied with dropsical accumulations;—in others, from organic changes, in the heart and brain especially, the consequence of previous loss of blood.

CHAPTER XVII.

ON HEMORRHAGE ARISING DURING LABOUR.

Respecting hemorrhages which appear primarily during actual labour little need be observed, since the event is of rare occurrence, and, when it does happen, must be treated in conformity with the recognized principles of obstetrics. Hemorrhage may arise at any period of labour; but it usually takes place either when the os uteri begins to dilate, or when its dilatation is nearly, if not completely, effected. When it arises *early* in labour, it almost invariably proceeds from the small deciduous vessels which pass from the uterus to the membranes, and thus constitutes (though in excess) what is vulgarly called the "shew." In this case the amount of blood lost cannot be attended with danger. When the effusion appears in the subsequent stages of labour, it may proceed either from detachment, or lesion, of the placenta itself. In many of these instances, the placenta, if not attached to the os uteri, will be affixed below the ordinary points of attachment, and its inferior edge may, perhaps, on a careful examination, be just within the reach of the finger. If, however, we are unable to feel the placenta, the source of hemorrhage can be presumed only from the stage of labour, and the circumstances attending the discharge; whether it be moderate in quantity, temporary in duration, and possessing little coagulation; or, considerable in amount, and frequently discharged, (especially during a pain), both in a liquid and coagulated form. This species of hemorrhage may proceed

to the extinction of life. Of this fatal termination however, I am acquainted with but one case. The patient died when the child was only in part delivered; and on inspecting the body, a large proportion of the placenta, which was situated at the fundus, was found to have undergone detachment, and blood in consequence largely effused. I am of opinion that these hemorrhages are sometimes attributable to the improper use of the ergot of rye. In all such effusions, it is obvious that when ordinary treatment is insufficient, delivery must be accomplished; in rare cases, by turning the child—more commonly, by means of the long or short forceps, according to the stage of labour, and the nature of the presentation.

CHAPTER XVIII.

ON HEMORRHAGE IN CONNEXION WITH PLURALITY OF CHILDREN.

Hemorrhages in twin cases are by no means unfrequent.* Of the signs which are considered as denoting a plurality of children, I refrain from speaking; since they are not only deceptive, but, even supposing they could be known, would lead to no practical result.† On the birth of the first child, but not earlier unless the uterine parietes should be extraordinarily thin, the existence of twins may in most cases be easily ascertained, by simply placing the hand upon the abdomen. If, however, a doubt exists, the hand should be gently passed into the vagina. This measure may be indispensably necessary, since, in the event of there being another child, the presenting part may be quite above the brim of the pelvis, and not within the reach of the finger. From neglect of this rule, several mistakes have occurred,—more annoying perhaps to the practitioner than to the patient; for instance, I know three cases in which, from the uterus being bulky,

* The observations of six eminent authors on midwifery, as to the frequency of twin cases, vary from one in 56 and a half to one in 96, reducing the mean estimate to about one in 83. Out of 6583 midwifery cases which occurred in the practice of the Birmingham Dispensary, from the year 1820 to 1830 inclusive, 85 were twins, being about one in 77. No case of triplets has presented itself during this period, in the practice of this Institution. But three cases of triplets have occurred in this town and neighbourhood within the last six months. I have once only met with a case of triplets, about the full period of gestation,—the children were born living.

† Baudeloque treats very fully on the subject.

unusually prominent and knotty, and irregular in its action, preparation was made for the reception of a second child; from eight to twelve hours elapsed before the deception was discovered, the placenta having been retained the whole period. In other and more serious errors, the practitioner has left the house, ignorant of the existence of a second child. Twins have usually a separate envelope, and a separate placenta—each placenta being connected by membrane. In very rare cases, one envelope is common to both. On one occasion, I had to rupture a distinct bag of water which presented before the birth of each child, and here there was a single fleshy placenta only.

In treating twin cases, there are certain established rules which do not admit of controversy—for instance, if the discharge of the liquor amnii should supervene directly upon the birth of the first child, and the arm be found to present, (an occurrence by no means unfrequent), turning should be immediately accomplished. But in case the membranes have not given way, and the fingers may be discovered lying within the cyst, I think turning should be accomplished on the first moment of the return of pain, but not earlier. Supposing, however, the presentation does not require to be changed, what course should be pursued when the uterus makes no effort to expel the second child? On this point, great difference of opinion prevails. I have on many occasions felt dissatisfied with the chief rules enjoined by authors, respecting the management of these labours. Burns, disregarding the state of the uterus, observes, "If effective pains do not come on in a quarter of an hour, the child ought to be delivered by turning;"* thus expecting the

* Principles of Midwifery, 6th edition, p. 405.

uterine efforts in the expulsion of the second child, to be renewed earlier than they are commonly found to be in the expulsion of the placenta. Although an immediate delivery of the second child appears to have been the established rule in the time of Dr. Hunter, we find that whilst this eminent man sanctioned the rupture of the membranes, when the pains failed to be renewed within the hour, he always preferred consigning the birth to the efforts of nature.* Gooch, having stated that the uterus is often tardy in resuming its efforts in the delivery of the second child, and having declared that in such cases the object is to excite expulsion by the uterine efforts, recommends the membranes to be ruptured immediately on the delivery of the first child, and to turn and deliver if pains do not come on in two hours after the waters are discharged.‡ It is difficult to reconcile the contradictory directions of Dr. Ryan on this subject, who, having stated that "If the pains be deferred after an hour from the birth of the first, we may rupture the membranes," almost immediately adds, "If the second child do not come away in an hour after the first, it ought to be brought away by turning."§ We are instructed by Denman and others, neither to deliver immediately, nor to commit the case altogether to nature, but to adopt a medium course, and to interfere after the lapse of four hours. As respects the first general rule, viz. that of acting after the lapse of fifteen minutes, we should consider what would be the probable result of a forcible delivery, when thus performed immediately upon the termination of a long and distressing process, when the uterine energies appear almost expended, and before they are sufficiently recruited to admit of a renewal of the action. After

* Manuscript Lectures.
‡ Compendium, by Skinner, p. 259, and seq.
§ Ryan's Manual, p. 290.

the delivery of triplets, which was gradually accomplished by the natural powers, although it was unattended by hemorrhage, the patient was left in a state of great exhaustion. She recovered, however, very favorably. In this case, it is more than probable, that under a very early interference in the delivery of the first two children, a fatal event would have ensued. In effecting a speedy delivery of the second child, two very powerful inducements prevail with the practitioner, viz. the saving of his own time, and the facility with which turning, under these circumstances, would probably be accomplished. The first temptation to interfere, selfish in its nature, and subordinate in its object, needs no comment. Irksome as he may find it, the practitioner is on no account to leave the house before the labour has terminated. The second is founded on erroneous principles, as although an undue muscular resistance in a case of turning may endanger the integrity of the womb, a state of relaxation is directly calculated to produce hemorrhage. Our object should rather be to obtain such a degree of contraction as shall ensure the patient's safety. As to the second rule, viz. that of acting in one, two, or four hours, it may be asked, why act at these particular hours, in preference to any other definite period? for it may be as improper to act at such times, as at the end of fifteen minutes. Indeed, if there be any preference, I should select the shorter rather than the longer period; since, in the one case, the uterine action would scarcely have subsided, whilst, in the other, our efforts would be exerted at a time when there is no pain at all, thereby incurring either irregularity of action, or a state of inertia. Time cannot be a correct standard to act upon, where so much depends upon accidental occurrences. Even should it appear that each of these several modes of proceeding has been found to answer, it would only furnish additional

evidence of the powers of nature, and by no means prove the applicability of the rules in question to particular cases, especially those in which hemorrhage is at all likely to ensue. Respecting the third mode of proceeding, deferring the case altogether to nature, it may be remarked, that whilst we exercise the utmost jealousy of interference, it will be proper, under a protracted suspension of pain, to employ such gentle means as may appear best adapted to promote uterine contraction. This rule, therefore, is defective. It is true, that so long as the second child remains in utero, there can be no absolute security from hemorrhage; but from my own observation, I should say, that when the pains have totally ceased with the birth of the first child, four hours is too short a time to expect their renewal. The very character of the labour suggests the propriety of avoiding direct interference. It should ever be recollected, that in these cases the children frequently vary in size. When the smaller child is born first, the uterine efforts will probably be renewed very speedily, (unless in a very premature labour); but should the larger child be expelled first, an additional length of time will be required for the purpose. Moreover, the second child not unfrequently presents præternaturally, with the breech for instance; and a much longer time may be required for its expulsion even under active pains, than we are apt to expect. I was called by a midwife to a tedious case of breech presentation. It was evident on its termination that there was a second child, and I detected, through the membranes, the breech presenting. The evacuation of the liquor amnii, which occurred half an hour afterwards, was directly succeeded by pains, which soon became very strong, and continued seven hours before the child was expelled. Had there been any premature interference, instead of the second child being born alive, and the placenta separating speedily, it is almost

certain that hemorrhage would have been the result, and the child probably still born. "We must never forget," says Dr. Denman, "it is not the mere delivery of a woman which is of value, but as this may be the means of freeing her from the immediate danger she is in, leaving her with the fairest chance of a perfect recovery, at the same time preserving, should it be possible, the life of the child."* By interfering prematurely, we incur a two-fold danger—hemorrhage, and irregular contraction. Leake remarks, "Such fluxes of blood as happen after delivery, may be brought on after the distension of the uterus, in twin cases."† Gooch judiciously observes, in waiting for the return of pains "Be prepared for the occurrence of hemorrhage in these cases, and manage the labour so that this danger may be guarded against by all the natural powers. Make the uterus, if possible, expel the head, shoulders, body, and limbs of the child. Thus you will have the fundus uteri close on the heels of the child; irregular contraction of the uterus, therefore (which is most frequently owing to bad practice), cannot take place. I have compared notes with those who make it a rule to extract the second child immediately after the birth of the first, and I find that they are often embarrassed by irregular contraction of the uterus and hemorrhage; neither of which will happen if the uterus is left to expel every part of the child."‡ By this mode of conducting the labour, we ensure the tonic contraction, and consequently prevent hemorrhage. When the distension has been great, contractions will but slowly arise; and when they do not occur, the placental vessels, if not larger than common, being double in number, a prodigious effusion of blood may escape in a very short period

* Introduction to Midwifery, vol. ii. p. 412.
† On Uterine Hemorrhage, p. 252.
‡ Compendium, by Skinner, p. 259 and seq.

of time. Three of the most serious hemorrhages which have occurred in my practice, succeeded the birth of twins, and could be distinctly referred to the circumstances attending the delivery of the second child. These patients recovered. Two of my professional friends were less fortunate under circumstances in other respects very similar. Each of these gentlemen lost his patient from hemorrhage speedily after the removal of the placenta. Under a vigorous action of the womb, the expulsion of the second twin may speedily follow that of the first, probably in less than half an hour. But when, after a respite, the pains are feebly renewed and increase in a gradual manner, the process of the second birth, committed entirely to nature, has in my own practice averaged from six to eight hours, and the patients have uniformly done well. Generally speaking, however, the progress of twin cases is slow from the onset of labour. The size of the children may be unusually great; the quantity of liquor amnii surrounding each child may be in excess, (which accounts for premature delivery being frequent in twin cases); or other circumstances may occur to enfeeble, and for a short time paralyze, the uterine action; so that if the second fœtus is delivered before the natural efforts are renewed, an irregular or deficient contraction will be the result. In proportion as the uterine parietes become unusually stretched, it is reasonable to expect a deficient contraction, and consequently hemorrhage.

In the management of the second birth, Dewees is influenced entirely by the condition of the uterus. If the organ is flaccid, he would on no account interfere; if it is firm and in a tonic state of contraction, and frictions have failed to excite the pains, he makes it an artificial labour. In his own words, "It will be proper to act whenever we are assured

that the powers of the uterus are in full and healthy play." It may be remarked, however, that when the tonic state is *fully* secured, pains will naturally ensue, and supersede the necessity of artificial delivery. Capuron is influenced entirely by the contractile powers of the uterus. If it were prudent to fix a definitive time, which I will not assert, twelve hours, in the absence of pain, is by no means too late. In the eighty-five cases which have occurred during a period of ten years in the practice of the Birmingham Dispensary, it appears, that whenever the birth of the second child did not speedily follow that of the first, the pains were not renewed, on the average, under ten or twelve hours, thereby corroborating the view taken of this subject by Dewees. In a few instances, twenty-four or thirty hours were required. Under a suspension of pain, prudence requires us to guard against any source of general excitement, to forbid stimulants, to enjoin perfect repose in the horizontal position, and to afford the patient every encouragement. In order to excite the womb to contract as soon as the patient is sufficiently recruited, frictions and the application of a firm bandage may be employed, the ergot of rye administered, and the os internum stimulated by two fingers passed within it. Should this treatment fail, and should it be determined to promote delivery, the membranes may be ruptured. But it is most desirable that some degree of action be previously induced—or, on the evacuation of the waters, the child may be suddenly expelled, and difficulties consequently arise in the separation of the placenta. But to the principle of rupturing the membranes in twin cases, unless under the circumstances stated, I am quite opposed. Whenever the membranes are ruptured, we must not fail to pass the hand sufficiently high to ascertain the presentation, in order that should the arm be found to present, delivery may be undertaken in conformity to the rules

which apply to such cases. In waiting for the efforts of nature in the birth of the second child, I have been very successful. In two instances in which I pursued a different practice, the results were less favorable. There is a considerable resemblance between these instances, one of which I will briefly mention. The first child was born at nine, A.M. At one o'clock at noon, I saw the patient. There had been no return of pain. By passing the hand into the vagina, I ascertained that the presentation was natural. Frictions were used, a bandage was applied, and three doses of the ergot of rye administered, but without effect. At six o'clock, P.M. as the patient had become exceedingly anxious respecting her state, I again passed my hand, and ruptured the membranes. The quantity of water discharged was unusually great. Immediately after I had quitted the house, a pain ensued, and after two more pains, including a period of ten minutes, the child was expelled about twenty minutes past six. Violent hemorrhage ensued, and continued upwards of two hours and a half. At this period, I was recalled by the midwife, and found the patient almost lifeless. I introduced my hand in utero, and, having arrested the hemorrhage, presently separated the two adherent placentæ, retaining the hand in the cavity until the organ had properly contracted. This patient recovered, though with great difficulty. I am satisfied that had the membranes been ruptured under natural pains, hemorrhage, in all probability, would not have occurred. It is not possible to fix a definitive time for delivery to be undertaken: contractions will usually commence in due time, and, in the interim, the practitioner must be employed in watching over the case, lest hemorrhage or any unfavorable symptom should arise, to render immediate delivery expedient. So long as the placenta belonging to the first child continues in close attachment to the uterus, hemor-

rhage cannot happen. Should hemorrhage arise, delay will be inadmissible. But when committed to nature, it will rarely happen that the contractions by which the first child is expelled, will detach any part of the placenta appertaining to it, whilst a second is still in utero. Should the practitioner resolve upon the speedy delivery of the second child, it is very material, when a violent flooding is not actually present, that great deliberation be exercised in accomplishing the operation —at all events until the breech is expelled—an assistant, at the same time, making moderate pressure externally. In instances of this nature, a longer time will commonly be required for the detachment of the placenta. In soliciting their expulsion, we are enjoined very properly, to act by each funis simultaneously; though it sometimes happens that the placenta of the first child is detruded from the uterine cavity, and resting in the vagina, (where it is held by the membranes which connect it with the placenta of the second child), whilst the second placenta is still adherent, wholly or partially, to the fundus of the womb. It is most desirable, with a view of preventing hemorrhages, that both placenta should be expelled together; since there can be no perfect contraction of the vessels so long as the placenta is retained in utero. In a case of triplets, the delivery of the placentæ had very nearly deprived the patient of existence. The first child was born on the evening of Saturday. On the Monday evening following, the second child was delivered by turning, the practitioner then removing the two placentæ—very violent flooding immediately ensued, and continued, more or less, until Wednesday evening, when, to the surprise of all parties, a third child was expelled. The practitioner had left the house soon after the birth of the second child, not aware that the uterus contained a third child, and therefore unconscious of the error he had committed.

CHAPTER XIX.

ON THE ORDINARY MANAGEMENT OF THE PLACENTA, AND ITS CONNEXION WITH HEMORRHAGE.

Upon this subject, some plain directions appear perfectly relevant, since hemorrhages arising after the delivery of the child may frequently be attributed to mismanagement of the secundines. The mode of union between the placenta and uterus is by simple apposition, and the vessels which pass from the uterine to the placental surface, a layer of decidua intervening between them. Whilst certain eminent accoucheurs advocated the speedy extraction of the placenta, Dr. Hunter, during many years of his practice, consigned its disengagement altogether to nature, never interfering unless an hemorrhage arose. Many others followed his example. Several accidents at length occurred, which led to the adoption of a practice more consonant with the personal safety of the patient. The consequences of a blind dependence upon the efforts of nature alone, are equally unfortunate at the present day; of which several instances might be adduced in illustration. In a case which very recently occurred, the patient, (moving in a very respectable sphere of life), after much suffering, expired under an attack of hemorrhage on the fourth day after delivery, the entire placenta being retained in utero. Generally speaking, however, an opposite practice now prevails: we seem to have passed into the contrary extreme. We are accustomed to solicit the separation of the placenta by an effort, however inconsiderable it may

be, with the funis, before the womb has resumed its contractile powers; paying too much respect to time, and too little to the particular circumstances of the labour. If the skilful management of the placenta is justly deemed a great attainment in the practitioner, it cannot be doubted that it is of great importance to the patient, whose life, indeed, may be said to depend immediately upon it. A saving of the practitioner's time, and a culpable acquiescence in the prejudices of the ignorant, have too frequently caused its rash and speedy extraction, and thus reduced the patient to a state of the most imminent peril. Dr. Denman seems to have been fully sensible of the danger attending the premature removal of the placenta, when he dictated the following sentiment, "When we have seen a child safely expelled by a process beautiful, and regulated by the greatest wisdom, there seems to be no reason, why we should be apprehensive of error or inability in those powers for the separation or exclusion of the placenta, which is but an inferior and secondary part of the same process; or why we should not in this, as in all other cases of medicine, be first convinced of the necessity of using art, before we attempt to give assistance."* Ruysch, who has some valuable observations on the danger of a hasty extraction of the placenta, remarks, "The placenta generally adheres to the fundus uteri, in which part these orbicular fibres, very strong in themselves, and exerting their power according to their direction, contract the body of the uterus into rugœ; from which disposition it follows, that those parts of the placenta which cannot be adapted to this altered surface, are of course loosened and shook off. It is observable, that the other muscular fibres of the uterus, are promiscuously interwoven in different directions, that they may expel the fœtus

* Introduction to Midwifery, vol 1, p. 375.

by a general contraction, but this peculiar muscle, from its situation and action, is intended to force away the placenta only."* Influenced, as it would appear, by similar considerations derived from its anatomical structure, Mr. Roberton, in his interesting observations,† urges the contraction of this particular part of the womb as a matter of paramount importance in effecting the separation of the placenta. To guard against irregular action of the uterus, it is necessary, according to the directions of Mr. Roberton, that the longitudinal fibres be materially shortened; that contraction of the body should be avoided while the fundus remains relaxed, and that in obtaining those of the fundus, we most effectually secure the uniform contractions of the whole viscus. To obtain this action of the fundus, he recommends that the uterus should be grasped evenly by the hand, and that friction should be applied equally to the back and front, the patient during the time lying on her back, in order that the organ may remain more in the line of axis, and thus be "more readily supported and manipulated." By this contraction, the fibres which surround the blood vessels are sufficiently closed to prevent any material effusion. On the birth of the child, and before any effort is made with the fundus, the hand should be placed over the abdomen to ascertain the state of the uterus, which, if the labour has been properly conducted, and there is no other child, should be found in a tolerably firm state. On the renewal of the uterine action, denoted by the organ hardening from time to time, and usually attended with pain, the placenta will be found differently situated in different cases. If the child has been expelled by slow and repeated efforts, the contractions which expelled the breech and extremities, may separate the pla-

* Ruysch Advers. Anatom. Dec. 11. Observ. 10.
† North of England Med. and Surg. Jourl. No. 3, p. 332.

centa from its attachments; it may, therefore, be found either wholly in the vagina, or just entering this cavity and partially remaining in the uterus, or otherwise entirely in the uterus, altogether loose, or only in part liberated from its connexions. Under a firmer union, or a less efficient contraction, several progressive efforts will be necessary for its detachment. When it rests upon the cervix uteri, it will generally be entirely detached and within reach of the finger, and may be at once removed. The separation of the placenta is usually indicated by three signs; pain; a discharge of blood, (though the blood is sometimes retained in the membranes); and the descent of the mass so that it may be felt by the finger, the least equivocal of the three. The sudden but moderate flow of blood, both in the coagulated and liquid form, in escaping often makes a gurgling noise; and as this discharge indicates separation, it may be regarded as favorable, and will cease on the contractions becoming more general. The uterus, by its renewed contractions, aided by the action of the abdominal muscles, totally disengages the placenta, and at the same time nearly closes the extremities of the vessels. The entire separation of the placenta, and the natural contraction of the womb, constitute the only security against flooding. Prematurely to separate the placenta, either wholly or in part, from the large and flaccid uterus, would be to incur a certainty of hemorrhage: the vessels cannot be constringed, and after the first effusion, the blood passes directly from the mother's system. As long as the placenta is entirely in connexion with the womb, there can be no hemorrhage, and no danger from waiting; but in thus attempting its removal prematurely, the uterus being in a flaccid state, the extremities of the vessels are left open, flooding induced, and the uterine action either paralyzed or rendered irregular. As a general rule, the contractions of the uterus should precede any

attempt to remove the placenta; nor should the funis be employed with a view of promoting these contractions, especially if the placenta be enclosed within the organ beyond the reach of the finger. If no part of the placenta can be felt, the mass must be still adherent to the fundus. To keep the funis moderately extended in the axis of the brim of the pelvis, by means of that portion of it nearest the vagina, so as to prevent its retrocession in the act of inspiration, cannot be productive of injury; but if the placenta fails to descend under a very moderate traction, the efforts should, for a time at least, be abandoned. By urging and using it as a lever, especially when the womb is uncontracted and the mass not within the reach of the finger, (no unusual practice), separation is only in part accomplished, and hemorrhage is the result. We also incur the risk of inversion* and prolapsus of the uterus, disruption of the placenta, and rupture of the funis. Besides these, as well as an increased liability to diseases generally of the puerperal state, another evil may sometimes indirectly arise from the practice of hurrying away the placenta. After pains, although at first accompanied by a mere augmented sensibility, have been observed, when very violent and of long continuance, to pass into actual peritonitis, the transition from the spasmodic to the inflammatory state not being perceptible until recognized by the usual rigor. The student should recollect that the process by which the placenta is separated is analogous to that by which the child is expelled,

* It is obvious that before contraction has commenced inversion of the uterus may easily be incurred. Since men have been generally employed in midwifery, this accident has comparatively speaking rarely occurred. I am acquainted with two instances only. In one it was produced in the manner now alluded to; and as the practitioner was not aware of his error the replacement of the organ was never thought of, and the hemorrhage proved fatal in three hours. The uterus lay without the os externum, the placenta adhering to the fundus. In the other case, the inversion was occasioned by a manual separation of the placenta. The patient is living but the accident is irremediable.

differing only in degree; that as the contractions increase, the uterine parietes shrink and corrugate, the cavity diminishes, and the placenta, a passive agent, is necessarily disengaged by means admirably adapted to that end. He will avoid incurring the risk of its premature detachment, more especially when its peculiar connexion with the uterus is kept in mind. This will be fully understood when the size and number of the vessels are considered. On separating the placenta, in the dead subject, from its connexions with the uterus, so large and open are the blood vessels that Dr. Hunter compared them to the bottom of a cullinder. When injected, the vascularity appears surprising. Unless the insertion of the funis in the placenta can be distinctly felt, so that pressure with two fingers may be made upon it, acting more directly on the edge of the mass first, it is far better to employ the funis merely as a director, and after a given time, to be determined by circumstances, to adroitly pass the hand into the uterine cavity. It is of course premised, that previously to the adoption of this measure, brisk frictions, external pressure, and cold applications, shall have been ineffectually employed. In aiding the separation of the placenta from the uterus, we should in all cases make a point of co-operating with the contractions, an assistant making pressure on the abdomen. The traction, to be successful, must, as Capuron observes, be directed in such a manner as to be parallel to the axis of the aperture, and perpendicular to the insertion of the placenta. If the placenta is situated at the anterior part of the uterus, we are directed* to place the chord behind the fingers and press it back towards the projection of the sacrum, the other hand in the mean while being employed in keeping it gently on the stretch; and vice versa, when it is

* Dewees' System of Midwifery, p. 515.

affixed to the posterior part. The same principles will apply when the placenta is inserted more laterally, whether it be to the right or left side—if the former, the chord must be inclined to the left side—if the latter, to the right. On its descent, having by the left hand embraced the chord with a napkin, we may carry the first finger of the right hand to the upper part of the vagina, and withdraw the placenta first in the direction of the axis of the brim, and secondly in that of the outlet. It is in these cases taken for granted that the precise site of the placenta shall previously have been ascertained, by tracing the chord through the os internum towards that part of the uterus to which it more immediately inclines—a point more easily determined when the patient lies on her back. When the placenta has entirely fallen into the vagina, it may be withdrawn; for although its presence in that cavity may perhaps excite the energies of the womb, it may also give rise to a concealed hemorrhage, and when suffered to remain long in this situation, it has subsequently been retained by the contractions of the vaginal orifice. From this cause, I once removed the placenta thirty hours after the birth of the child. Caution is still necessary, even when the placenta has arrived at the outlet. If unsupported, its own weight may separate it from the membranes, leaving them in the uterine cavity, and thus favor the lodgment of coagula, provoking hemorrhages, and especially after-pains both severe in degree and long in duration. On passing the os externum, the placenta may be turned round two or three times in the act of extracting it, so as to twist the membranes and prevent them breaking. When the membranes remain partly in utero, the placenta being entirely disjoined from them, we may put them moderately on the stretch with the thumb and fore finger of the left hand; at the same time, inserting the first and second finger of the right hand through the os uteri, and making a gentle pressure upon the membranes,

aided by counter pressure over the abdomen, we may gradually solicit the retained portion until it is peeled off and withdrawn. An important question now arises, as to the time ordinarily permitted for removing the placenta by art. In the absence of hemorrhage, from half an hour to an hour is usually allotted for the efforts of nature. But should the patient be losing much blood, and the vital energies becoming much depressed, we are very correctly enjoined not to wait a moment.* The former rule, when reduced to practice, is very defective; as time alone, disconnected from the circumstances of the labour, is a false standard to act upon. The question ought rather to merge in, and our judgment be influenced by these enquiries—whether the child was expelled after an unusually rapid labour, or after a very difficult, long, and exhausting labour?—or whether the uterus was extraordinarily distended either by the liquor amnii, a large child, or a plurality of children? In the case first supposed, a partial separation of the placenta, and consequently hemorrhage may be expected. In either of the other cases, it is improbable that the uterine contractions will be resumed in the ordinary time, since the organ is indisposed to act, and may even undergo temporary paralysis, like the bladder under excessive distension. The state both of the patient and of the uterus must be taken into consideration. Dr. Ramsbotham, indeed, tells us, that "After a long protracted labour, in which the strength has been much exhausted, an *earlier* extraction of the placenta may be more frequently called for than in com-

* I do not here refer to that single though copious gush of blood which sometimes instantly follows the delivery of the child, and rapidly ceases on the diminution of the uterine cavity; but to a violent and continued effusion demanding very prompt and decisive treatment. The degree of placental separation may not be material, still the size of the vessels and their anastamoses sufficiently account for the copiousness of the discharge.

mon cases,"* a statement which appears to me in opposition alike to reason and experience. But when the fœtus is expelled without an undue protraction of suffering, the separation of the placenta will generally be completed in about twenty-five minutes, or from that to forty. Burns allows one hour, and Dr. Joseph Clarke two hours, to the efforts of nature in common cases. On the expiration of this last mentioned period, and in the failure of all gentle means to promote the expulsion, the contraction being insufficient for the purpose, probably Dr. Clarke's observation is correct that little is to be expected from nature, and that a prudent interposition of art may then be advisable, though in many cases we may safely wait still longer. To the rule laid down of not acting *before* the expiration of the second hour, I cordially agree: for admitting that an expert and skilful practitioner may perhaps act with propriety after the lapse of the first hour, yet as a principle for the government of the student, I am satisfied that the interest of the patient will be best consulted by granting to nature, in ordinary cases, a more extended time, four days being the longest period it will be prudent to wait. The unhappy consequences which I have in many instances traced to a hasty removal of the placenta, justify me in preferring as a standard the longest time which can consistently be permitted. Some placentæ are far more compact and fleshy than others, the firmness of the connecting medium being such as requires a longer time for the separation, even when there is no deposition of lymph, and consequent agglutination of surface. I do not, however, attribute its unusually long detention to a mere augmentation of bulk; for I have frequently found more difficulty in the separation of the small than of the large placenta. Coinciding,

* Practical Observations, p. 51.

however, in Dr. Clarke's sentiments as a general principle, I am nevertheless satisfied that it is neither natural nor yet prudent to fix a definite time for the removal of the placenta —indeed, no time can be fixed that can apply to each individual case; the state of the general system, on the one hand, and that of the uterus itself on the other, both as respects its contractions and discharges, can alone furnish us with a correct standard of action. When delivery has been undertaken on account of hemorrhage, the placenta, unless it has acquired a morbid organization, is usually found either wholly detached or so slightly connected with the uterus as to admit of prompt and easy removal. Should there be reason to infer that the degree of placental separation before delivery has been extensive, it will be prudent to solicit the contractions of the womb instantly on the birth of the child, in order to guard against a further effusion; which, under the relaxed state of the viscus, and from the number and size of the vessels, would be likely at once to ensue. But at whatever period of the labour the hemorrhage may have arisen, whether antecedent or subsequent to the delivery of the child, provided it has ceased and the system is in a state of collapse, the mere debility is a sufficient reason for not hurrying away the placenta, unless indeed it is entirely detached. Its prompt removal, though essential under a pressing hemorrhage, may be absolutely dangerous when the effusion has terminated, and before the patient has in some degree recovered from its effects. In cases of plurality of children, peculiar care should be exercised in the management of the placentæ. In the absence of hemorrhage, additional time also, as already observed, should be allowed for their expulsion; since it is unreasonable to expect, in these instances, as speedy a renewal of uterine action as after a single birth. Some time ago, I was consulted in a twin case respecting the delivery of the second child.

It was deferred to nature, and expulsion took place four hours after the birth of the first. I afterwards learnt that owing to the placentæ not having separated in an hour, the practitioner introduced his hand into the uterus, and detached them. Hemorrhage ensued, and the patient speedily expired. When ordinary means fail to produce detachment, a manual operation is indispensable. A few plain cautions in respect to the proceeding may be here properly subjoined. When the placenta is affixed over the centre of the fundus, partly in front, and partly behind, the choice of hand will be immaterial. Indeed to a skilful practitioner, it signifies little, under any circumstances, which hand he employs. It is better, however, to convey the palm of the hand *direct* to that part of the uterus to which the placenta is attached; for instance, the right may be employed when the attachment is posteriorly, or on the left side, and vice versa. In all these operations, the nails should be kept short. In a case of retained placenta which proved fatal, I observed a number of slight lacerations occasioned, it is presumed, by the length of the nails. The hand, when its mere presence is insufficient to excite contraction, should be retained in the uterine cavity, and moved about so as to stimulate the parietes; or pressure may be made with the back of the hand upon the inner surface of the mass itself, until contractions are provoked which will expel both the hand and the placenta. Our object is rather to excite the uterus to contract than to remove the placenta. In order to steady the uterus from its undulating motion, pressure should at the same time be made upon the abdomen with one or both hands of an assistant applied flat, or, in the absence of a competent person, an antagonist pressure may be exerted by the operator's right hand. In these, and indeed all other proceedings in which it is necessary to introduce the hand into the uterus, it is very material that we proceed with calmness,

great deliberation, and a due regard to the axis of the pelvis both of the brim and the outlet. From inattention to these points, the most fatal consequences have ensued. The hand has in several instances been passed through the anterior part of the vagina, and the bowels been known to prolapse through the aperture. As respects the uterus itself, it is impossible to act with too much gentleness in these manual operations, by which strong contractions are in some instances very easily provoked. The practitioner must not only humour the organ, and proceed in the intervals of inaction, but also regard his hand (to be passed in a conical form) rather as a passive than an active instrument. The following case shews the possibility of most serious mischief even under skilful management—what, then, may not happen under a rude proceeding? A highly esteemed friend of mine once found it necessary to pass his hand into the uterus, for the purpose of removing an adherent placenta, the ergot of rye having previously been administered.* The introduction was carefully performed. The straining and opposition to his efforts on the part of the woman were exceedingly great; and at the moment when the operator's hand had reached the organ, my own hand making a counter pressure upon the abdomen, the patient became violently convulsed, and died in less than a minute. She had been subject, in her former confinements, to retention of the secundines, with hemorrhage; and as an hour had elapsed from the time of delivery, and the hemorrhage had commenced as on previous occasions, the removal of the placenta was judged expedient. I concluded, from the state of the pulse, that she died from apoplexy, but no examination was permitted.

* See the chapter on ergot in relation to retained placenta. Had the action of the ergot any share in producing the fatal event? I have heard of cases of sudden death under the exhibition of this medicine, and also under the action of the strychnine.

CHAPTER XX.

RETENTION OF THE PLACENTA.

Retention of the placenta evidences an unnatural condition of the uterus. There are three principal states of the organ to which this retention may be ascribed. First,—the inert or torpid state. Secondly,—irregular or spasmodic contraction. Thirdly,—that state of the organ in which the placenta has obtained a morbid adhesion to the parietes. Hemorrhage is to be expected in these several conditions.

There is another state, of rather unusual character, described by Dr. Ramsbotham, in which the uterus assumes a globular form, and, by contracting too rapidly, embraces and detains the placenta before time has admitted of its ejection from the organ. It is attended with little discharge, and the os uteri is almost closed upon the funis. It has been already noticed that a state somewhat similar to this sometimes supervenes upon the forcible action of the ergot.

From what has been remarked, it will appear that a successful separation of the secundines greatly depends upon the management of the delivery of the child. In confirmation of this, Dr. Merriman declares that retention of the placenta occurred in his public, five times as often as in his private practice; the instances being about once in seventy-seven labours in his public, and not so often as once in three hundred in his private practice. The statement

accords with the experience of others. Cusack in particular mentions fifteen cases of this nature, arising from previous mismanagement. Admitting that retention of the secundines is sometimes occasioned by spontaneous irregularity of the parturient action, in most instances the deviation is to be attributed to unskilfulness.

Retention of the placenta may often be inferred from the circumstances attending the birth of the child, either from the labour being very protracted, or extraordinarily rapid, the uterine tumour remaining large, and not descending so low as usual. It may also be suspected, when under the labour pains one half of the uterus feels unusually tense, and the other unusually flaccid. In all irregularities of this description, the application of friction, according to Dr. Power's directions, will be found exceedingly useful.

I. Inertia may be inferred from the bulky, flaccid, and uncontracted feel of the uterus, and the absence of pain. It varies greatly in degree. But for the purposes of practice, two states may be specified—an extreme state, and a simple state of inertia. An extreme state can scarcely exist with an active and present effusion, but as a sequel and result of hemorrhage, it not unfrequently occurs. In the simple state, there is usually a discharge of fluid and coagulated blood. Inertia may usually be traced to a premature effort with the funis—occasioning a partial detachment of the placenta, and the blood, unless passed rapidly into the vagina, becomes coagulated; the coagulum so formed surrounds the cervix uteri, and plugs up the aperture. A similar mechanical impediment may be occasioned also by the placenta itself, when it is totally detached, and lies over the uterine orifice. The os and cervix uteri are in some instances simultaneously the

seat of spasm. The principal question to be determined is this. Ought the placenta to be immediately extracted or not? Our practice must be determined partly by the state of the placenta, (which may be altogether freed from its connexions, partially detached, or entirely adherent), but mainly by the condition of the uterus itself. We have been advised by some authors to allow the placenta, when easily felt with the finger and lying quite loose in the flaccid uterus, to remain a short time in order to provoke contraction: I think it should be at once removed. No advantage can result from its residence in utero under these circumstances, since it would prevent, rather than promote, the contractions of the organ. In the absence of hemorrhage, there is certainly no pressing necessity for withdrawing it, except the chance there is that it may oppose the escape of blood, and thus allow it to accumulate. Gooch used to relate a fatal case of hemorrhage after delivery, in which, on examination post mortem, the placenta was found quite loose in the uterus, which was uncontracted, and contained nearly a gallon of half coagulated blood. When the inertia is complete, the organ being large and flaccid, and the placenta only in part detached, the mere removal of this body would avail nothing: the cause would still remain in full force. In this case, we should endeavour, and that promptly, to stimulate the womb to a renewed and efficient contraction, by means of brisk frictions over the fundus and body of the organ, cold applied over the hypogastrium, and the exhibition of the ergot of rye. In case of failure, it may be necessary to pass the hand into the womb to remove the spasm of its inferior part, should it be found to exist, as well as the obstructing medium, and promote an active contraction. If the presence of the hand should be insufficient for this purpose, cold water may at the same time be injected into the uterine cavity. The necessity

for passing the hand must be inferred from the sinking of the pulse, faintness, paleness, singing in the ears, restlessness, confusion of the senses, and a profuse discharge of blood; or, if little or no blood escapes externally, in addition to the constitutional symptoms, the uterus will be soft and perhaps the abdomen elevated in one particular part. But suppose no part of the placenta can be distinguished by the ordinary examination, the detachment being very trivial in extent, ought the practitioner to effect its total separation, and thus inevitably expose ten times the number of vessels? Under much previous depression, this measure might be fatal in its consequences; for should contraction not immediately arise, what is to restrain the bleeding, except it be dangerous syncope, approaching even to death? In the case supposed, the hemorrhage proceeds from a circumscribed spot. By a little deliberation, this spot may be ascertained, and so firmly compressed, (making counter pressure externally with the other hand),* that the bleeding, if not entirely checked, will be materially diminished in extent of surface. Time is thus gained—the circulation rallies—contraction is obtained—and any further placental detachment is attended with that constriction of the corresponding vessels which alone affords security to the patient. The hand and placenta will thus be expelled together. Having once *commanded the bleeding vessels*, it may be needful to give cordials; but not previous to this,—for as Gooch observes, a cordial in internal hemorrhage is like giving brandy to a person who faints from venesection, and allowing the vein to remain open. The inertia, however, may be more simple in its character. The uterine parietes may be so nearly in

* When the placental site is not lower in the uterus than usual, the four surfaces of the fundus, and a portion of the body also, may be compressed with an equal degree of firmness.

contact as to allow the fœtal part of the placenta to touch the opposing surface. The danger of removing the placenta will always be proportionate to the defectiveness of the contraction. In this case, however, the uterus is not altogether inactive; it makes an effort to contract, though this effort is feeble and insufficient for expulsion. External applications to stimulate the womb are, therefore, less essential than in the state last considered. The placenta may be removed more speedily, in order that perfect contraction may ensue, and the patient be secured against the risk of hemorrhage. In this form of adhesion, if the connecting medium is natural, Dr. Hamilton's mode of removing the placenta is to pass the hand to the insertion of the chord, then to grasp the placenta, and bring the fingers nearly together, so that the mass, by this pressure, may be detached from the circumference to the centre, and be expelled by the contractions of the organ.

II. The partial and irregular action of the uterine fibres constitutes spasm. The spasmodic retention of the placenta arises not unfrequently from irregularity of action in the expulsion of the child. The parturient action, instead of commencing at the fundus in a very gradual and passive manner, increasing slowly, but regularly, in frequency, degree, and duration, and extending to the body and neck of the organ successively, observes no regularity whatever; and although spasm may exist simultaneously with the labour itself, it more frequently appears towards its termination, the irregularity being first of all exerted upon separate parts of the child, and afterwards extended to the separation of the secundines. In some cases, no specific cause can be assigned for its production. Mr. Roberton supposes that friction, when applied directly above the pubes, and indeed whatever irritates the lower part of the uterus whilst the fundus is uncon-

tracted, favors spasm. Douglas refers these irregular actions to premature attempts to separate the placenta.* The spasmodic state cannot be determined with certainty merely by external examination, but it may be presumed if the uterus feels *partially* tense. In very marked instances, the irregularity has been clearly detected by external examination, a portion of the organ conveying to the hand a sense of firmness, and the remainder appearing soft and yielding. In shape it is sometimes oblong, extending as high as the epigastrium; sometimes quite globular; but as Denman observes, the forms which the uterus may assume in consequence of this irregular action are innumerable. There is usually more or less pain, though sometimes no pain whatever; the placenta is not within the reach of the finger, and the funis may be traced through the contracted portion. All efforts by means of the funis are futile; the uterus perhaps may be found to descend, but the placenta maintains the same relative position. A constriction of this kind, technically termed the hour-glass contraction, affecting the circular, whilst the longitudinal fibres are unusually lax and inactive, and encircling the centre of the organ only, is of very rare occurrence; and since the fundus uteri cannot perfectly contract on account of the placenta being contained within it, detachment almost necessarily is attended with a degree of hemorrhage, or there may be no detachment, and consequently no hemorrhage. Moreover, the hour-glass contraction and morbid adhesion may exist simultaneously, the former the effect of the latter. Statements have recently been published,† which impeach the received opinion, and altogether deny the existence of this particular contraction. The

* Med. Trans. of the Coll. of Phys. in Lond. vol. vi.

† See communications by Mr. Moss and Sir J. Chapman with rejoinders by Dr. Holbrook and Mr. Ilott, in London Medical Gazette, May, June, and July, 1830.

authors of these statements give us the credit of confounding the partial closure of the mouth of the womb with a spasmodic contraction situated beyond its neck. To the young practitioner, I allow, deception on this point is not unlikely to arise; for the inferior part of the uterus, being in a flaccid and dilated state, appears to be in direct continuity with the vaginal canal. On the expulsion of the fœtus, the os uteri, usually in a collapsed state but susceptible of the stimulus of the finger, though varying in descent, may generally be felt by an ordinary examination. But this is not invariably the case; for when the uterus is affected with spasm, the fundus being relaxed will be found higher than usual, and the vagina elongated in consequence—or, when the organ is distended with two placentæ, it cannot have contracted efficiently, and therefore will not have descended so low as in common cases.*

It appears to me that the seat of spasm has been limited too exclusively. Why should we doubt that the uterus may contract spasmodically in different parts of its substance? The tonic action may certainly prevail in the neck, whilst the fundus and body are inactive, and vice versa. Again, that these parts are respectively obedient to distinct and independent laws, may be presumed not only from circumstances attendant upon pregnancy, but also from diseases affecting the uterine structure. But if it be true, as I firmly believe, that this form of spasm usually is the result of mismanagement, more particularly in the employment of the funis before

* Having occasion, in a case of twins, to remove the secundines, so far from being able to feel the os uteri by the ordinary mode of examination, I even could not detect a portion of placenta which had descended quite into the vagina. Such was the elongation of this canal, that when my hand was passing the os uteri, my elbow was close at the os externum, the uterus being exceedingly large and dilated, and its fundus as high as the ensiform cartilage.

the fundus has resumed its tonic action, and also that the placenta has no determinate attachment, it will follow, that since the constriction must be *below* the insertion of the funis, its site cannot be uniformly the same. In several instances, I have found the constriction about the line of demarcation between the body and the neck, or still lower, even at the internal orifice; but commonly it is about two inches above this opening. The contraction may also occupy the centre of the womb; although the occurrence is rare, the fact itself cannot be controverted. In one instance, I observed after death a distinct puckering, the *remains* of this contraction, in the centre of the uterus, the placenta being imprisoned above it. My friend the late Mr. Kinder Wood, a most intelligent and cautious practitioner, informed me, that he had frequently met with the hour-glass contraction. It has been observed by Barlow, the only surgeon in England who has successfully performed the cæsarean operation, "In some cases, the mouth of the uterus has been found contracted upon the funis, soon after the birth of the child; in others it assumes the form of an hour-glass, and is contracted in the middle, and the placenta is lodged as it were in a cyst beyond this second entrance."* Gooch and many other eminent authors held similar opinions. The annexed cases are remarkable instances of this form of spasm. Case 1. About a year ago, I was called to a case in which the funis had been torn away, and the placenta retained in the womb seven hours after the birth of the child. Though the external parts were contracted, the os uteri, which could be distinctly felt by an ordinary examination, remained so flaccid as to allow my hand to pass with tolerable facility. The stricture was in the centre of

* See paper on the delivery of the placenta in vol. iv. page 320, of the Medical and Physical Journal—published also in his practical essays.

the organ, the placenta being enclosed in the fundus which contained a quantity of fluid and coagulated blood. Case 2. In this instance, to which I was called by a brother practitioner, a distinct and firm contraction was found at the cervix uteri, and a second at the centre of the organ, which allowed an edge merely of the placenta to pass through it, the mass itself being retained above the second stricture; and I could readily distinguish, through the abdominal parietes, the points of the operator's fingers, in the centre of the uterus on passing the first stricture, and at the summit of the fundus on passing the second. Case 3. At the instance of two respectable surgeons, I was called to a woman four hours after the delivery of the child, in consequence of the placenta being incarcerated beyond a firm stricture, through which the funis could be traced; and although opium had been freely administered, the stricture was indisposed to yield. On examination per vaginam, I discovered a hollow bell-shaped substance, almost as low as the os externum; flaccid like soft wet leather, and not susceptible of contraction by a gentle pressure between the thumb and finger, or by the presence of my left hand freely moved within it. I could pass my hand round its entire circumference, not only up to the insection of the vagina, but from the lax state of the parts, (by carrying the vaginal insection before my hand), much beyond it. It was most evident that it was nearly one half of the uterus. Having gradually dilated a very firm stricture, the placenta was found immediately above it, so that my fingers at once reached the fundus uteri. I separated the placenta, which was wholly in connexion with the uterine surface. By marking that part of my right hand opposed to the most depending part of the uterus, against which the tip of my finger was directed previous to the stricture being dilated, I ascertained distinctly the length of the intermediate cavity,

which was at least four inches and a half. The uterus was partially contracted above the stricture, though it had not separated the placenta, and therefore there was no hemorrhage. Case 4. I was called twenty-six hours after the birth of the child to a woman with retained placenta, the funis having been disrupted at its point of insertion. The os uteri, flaccid and nearly the circumference of a dollar in size, could be as plainly discovered by the finger as in the first stage of labour, and a portion of placenta was felt detached immediately above it. Although I succeeded in passing the os internum, it firmly embraced my hand. The detached portion of the placenta could be traced through a firm stricture in the centre of the organ, which with difficulty permitted my fore finger to enter, and above which the placenta was firmly adherent. The day previous to this, the practitioner in attendance had made several attempts to pass the stricture. This gentleman assured me that no part of the placenta could at that time be felt, the stricture closely encircling the funis, which then gave way. When I saw the patient the following day, the spasm must therefore have become sufficiently relaxed to allow a piece of placenta to pass by it, which it embraced very firmly. Opium and castor oil had been largely employed. The extreme turbulence of the patient compelled me to desist; she declared she would rather die than submit to the dilatation of the stricture. I was again called to the patient five days afterwards. She had bearing down pains truly distressing, and as forcible as though the child was passing the os internum—the breathing was laborious, the pulse rapid, the fœtor intolerable, the danger extreme. The hand was again passed through the os uteri, but not through the second stricture, but a large portion of the placenta was now withdrawn through it. Death occurred on the thirteenth day. On examining post mortem, the body was uniformly

healthy; a piece of placenta, about the size of a small egg, was attached to the fundus very firmly, and could not be separated either by the finger or maceration. Case 5. I was called in by a midwife two hours and a half after the delivery of the child, on account of an alarming hemorrhage occasioned by an effort with the funis, which had not only separated but also disrupted the placenta itself. The disrupted portion had descended through the os internum,* but I could not distinguish the insertion of the funis. The hemorrhage had ceased previous to my arrival, but the patient was restless and totally insensible, the lips exsanguine, and the circulation barely perceptible. After some improvement had taken place, as the uterus made no effort to contract, I passed my hand, and retained it in the cavity fifteen or twenty minutes. By this means, aided by frictions and pressure over the back part of the fundus, a most efficient contraction at length ensued, which expelled both the hand and the placenta, except the piece which had been disunited from the bulk of the mass. This remained firmly adherent; a violent contraction now ensued upon the retained portion, which barely permitted my finger to enter, but the straining was so great that the lips of the os uteri were forced through the os internum visible to the eye. The distance between the anterior lip (which was in advance of the posterior) and the strictured part of the neck, was four inches. This point was determined not only by myself but by my friend Mr. Chavasse, who accidentally saw the case at this moment.

But whether the irregular action is confined to one part or the other, or affects each part simultaneously, the object in

* As very illustrative of this state, see Diagram of Hour-glass contraction by Dr. Holbrook, London Medical Gazette, No. 129, for March 22, 1830, p. 303.

both cases is to remove the spasm, and establish a contraction at once uniform and permanent; and this is effected by a gradual dilatation of the stricture, and perhaps the administration of opium. Bleeding, with the view of relaxing the tension of the fibre, in a few cases has been resorted to. This measure, however, will entirely depend upon the state of the circulation; it will rarely be found admissible except in the instances of plethoric women, and in the absence of hemorrhage. Cold water suddenly applied is also supposed to aid the expulsion of the placenta, by producing a general in the place of a partial contraction. Capuron's suggestion, to apply the steam of warm water, appears to me not calculated to remove any material degree of spasm. On overcoming the stricture, the general contractions of the uterus must be obtained in order to disengage the placenta.

III. We have now to consider the last and most dangerous form of retained placenta,—morbid adhesion. It is very difficult, and perhaps impossible, to ascertain the existence of morbid adhesion, by ordinary examination. It may, however, be suspected when the uterus remains high in the abdomen, and when the pain, which varies in degree, though accompanied by the expulsion of coagula or liquid blood, is not attended with the principal mark of separation; and when the placenta does not descend during expiration, even though aided by slight efforts with the funis, which retracts when put upon the stretch. It is possible that no degree of detachment has occurred, and therefore no hemorrhage; but this state is difficult to suppose. When the adhesion is entire, no part of the placenta can be felt, and consequently it will be impossible to trace the funis to its point of insertion, or to feel the body of the organ. This adhesion, owing either to a deposition of lymph, or condensed cellular tissue between the

decidua and uterine surface, may be either universal or partial. It is inseparable from danger, and may occur after any labour. Although the firmness of the connecting medium be universal, it does not appear that the developement of the fœtus is at all affected by it, even should the induration partially affect the vascular portion of the placental mass. As in most cases the adhesion is only partial, there is generally a discharge of fluid blood. Burns mentions a fatal case of this kind, in which the placenta was retained "four days, by an adhesion not larger than a shilling." But supposing the adhesion to be very general, what is to be done? When we find so able an obstetrician as Dr. Joseph Clarke doubting what practice should be pursued in morbid adhesions of the placenta, it becomes a less experienced practitioner to deliver his sentiments with diffidence and caution. But since upon this point my opinion is most decided, I shall declare it without reserve. In the first place, the hand should be passed in utero, and an attempt made to stimulate its parietes by moving the hand about, and pressing gently with the knuckles. But if this be insufficient for effective contraction, and the patient, already suffering from depression, is losing much blood, it will then be proper to compress the bleeding vessels in the manner already recommended, and not attempt to detach the mass, especially if its great bulk is still adherent, until the first effects of the hemorrhage are removed. Until the immediate danger is past, to expose a vast number of additional blood vessels would be a most hazardous proceeding. But on the circulation improving, it may be requisite to act in a very determined, though cautious manner; for no degree of contraction, however powerful, will be adequate to the separation of the placenta, when adherent by a very indurated organization. Perfect and uniform contraction cannot ensue so long as the uterus is

occupied by the placenta. Indeed in some cases the organ will not be susceptible of contraction until the separation is effected. But the separation once effected,* the organ, under ordinary stimuli, will then be susceptible of natural contraction, and we should on no account whatever withdraw the hand until this essential act is accomplished. This point is of momentous importance, and can by no means be dispensed with. To detail cases in proof of this position would be tedious and unprofitable; the correctness of the statement will, I am persuaded, be recognized and fully admitted by many experienced practitioners. Even in concealed hemorrhage, the uterus after delivery is distended with coagula; unless, therefore, we obtain the discharge of the coagula, the uterine contractions, when much enfeebled, will be less rapid and effective; but scoop out the coagula, and unless the exhaustion be extreme, contractions will supervene. So long as the uterine parietes are subject to distension, whether from a fluid or solid body, perfect contraction cannot take place.

There is a very peculiar form of retention of the placenta alluded to by Dr. Ramsbotham, which has several times occurred under my own observation, but is, I find, by no means well understood. I mean the attachment by morbid organization of a circumscribed portion of the placenta, usually the upper surface, whilst another portion, the opposite edge and side, is detached, and lies over the os uteri, or perhaps projects in an elongated form into the vagina. This will be regulated in some measure by the site to which the pla-

* In this operation the hand must be insinuated between the membranes and uterine surface beginning at the cervix, and passed on to the edge of the placenta. In detaching the mass we should commence at the edge where it is the least closely maintained, and gradually proceed to the circumference until our object is accomplished.

centa had been attached; particularly when it happens to be affixed to the inferior part of the womb, since on the delivery of the child the detached portion falls the more directly into the vagina, and the practitioner, so far from thinking of morbid adhesion, actually considers the whole separation as very nearly, if not completely accomplished. This state, therefore, is really a source of much deception and embarrassment; for as the lower part of the uterus, and sometimes the vagina, is occupied by a detached portion of the placenta, the practitioner most unceremoniously urges its detrusion by means of the funis, and reduces the patient to a state of imminent peril. In consequence of these efforts, the bulk of the placenta is torn away from the part which still remains in firm attachment; the os uteri closes upon it; and unless its removal can be promptly effected, the patient is necessarily exposed to dangers of the most formidable kind. For although the foreign body may be cast off, perhaps with perfect safety, or absorbed possibly without becoming decomposed, it is infinitely more probable that flooding, or decomposition and irritative fever, will take place. After ordinary means have failed, the introduction of the hand under this partial adhesion is indispensable. I have noticed this peculiar form of retention after a premature birth, when the placenta has not undergone any apparent change of structure. Its detention under such circumstances would appear referrible to a defective uterine contraction only; and from the comparatively soft state of the placenta, its disruption might be occasioned by a degree of extension with the funis which in ordinary cases could not be productive of injury. A particular reference to this point seems the more needful in consequence of a dangerous rule having been laid down respecting it in our latest work upon midwifery. Dr. Gooch, although admitting that the placenta may be adherent by a small portion of the mass, when its

great bulk is separated, does not allow that the mass can then be partially felt at the upper part of the vagina—a very serious error. He observes, "When the placenta can be felt at the upper part of the vagina by a common examination, you may pull with considerable force; for the vagina being elastic, the placenta is so firmly retained, that pretty much force is necessary to extract it."* To guard this statement from misconception, and to justify the degree of force here alluded to, the necessity for the whole placenta being in the vagina should have been expressed. I shall here state a single case in support of this position—a case important also in proof of coagula collecting in the uterus, whilst occupied by the child.—A woman, aged 18, was seized at the seventh month of her first pregnancy with a violent flooding, which recurred several times, within a few days, to such a degree as rendered it at length essential to promote delivery. On introducing the hand into the vagina with a view of determining whether the placenta was attached to the cervix uteri, the fore finger, passed half its length into the uterus, just touched the inferior edge of the mass. The membranes were then ruptured; the liquor amnii escaped freely; pain immediately followed; the hemorrhage ceased; and the fœtus was expelled in less than four hours. Immediately upon this, a large quantity of dark blood, partly fluid and partly coagulated, was forcibly discharged; which, judging from its appearance, must have been contained in the uterus previous to the delivery of the child. A portion of the placenta having descended into the vagina, the practitioner, supposing the whole mass to have separated, made an effort with the funis to withdraw it; but a fourth of the mass remained morbidly adherent. On examining the maternal orifice of the ex-

* Compendium, by Skinner, p. 157.

tracted mass, a considerable portion of it was found covered with a smooth and black coagulum, detached, no doubt, previous to delivery, and occasioning the hemorrhages. After the lapse of an hour, hemorrhage recurred, and was soon arrested; but was renewed on the fourth day with great violence—and again on the fifth. At this period, I saw the case. On examining, I found a mass of placenta hanging pendulous through the os uteri, but so tenaciously held by its upper part that its removal was impracticable by gentle means, and as the patient was apparently moribund, I did not attempt the introduction of the hand, but employed the plug, and administered a dose of laudanum and cordials. No further hemorrhage occurred, but she died in about four hours. On inspecting the uterus post mortem, a piece of placenta, four inches in length, and two in breadth, was very easily detached from the surface, to which it adhered. The organ was in a tolerably contracted state, and contained little or no blood.

In the manipulations necessary for the removal of the adherent placenta, whatever may be the kind of adhesion, we cannot act with too much deliberation, and the most gentle means are commonly not only the safest, but the most efficient. As a general rule, the firmer the adhesion, the more deliberate should be our attempts at disunion. With the necessity for stating this very prominently, I am deeply impressed. An examination post mortem, of cases in which portions of placenta have been left adherent, plainly evinces that the utmost skill and caution are essential in all operations of this nature. When the union is exceedingly close and firm, many of our best authors, (Smellie, Baudeloque, and Capuron, for instance), advise that the adhering portion should be left until the detachment becomes less difficult; but the rule which Burns

lays down of removing all that is not very intimately adherent, and leaving the rest to nature, is perhaps the best. That it is far better to act upon this direction, and allow the mass, under a very close organization, to remain, rather than risk fatal injury of the uterus itself, cannot be disputed. For, admitting that there can be no perfect contraction, and consequently no security against hemorrhage, so long as a material portion of the placenta is adherent; still, far greater danger would be likely to ensue from a rude, and tedious, and probably at last imperfect separation. Supposing, however, the patient is losing much blood, we shall be fully justified, (provided the attempt be deliberately and carefully made), in effecting the separation, as far as circumstances will allow. When the placenta has been removed by a manual operation, the practitioner should always very carefully inspect the maternal surface, in order to ascertain that no portion of it is left in utero—a rule which should not be neglected, even when separation has been most favorable. It must be admitted that under a very close adhesion of the placenta to the uterus, the mass being very ragged and broken down in the act of disunion, it may not be easy to determine whether or not small pieces may have been left behind. When it is known that a considerable portion of placenta remains in connexion with the womb, the patient must be narrowly watched, in order that the opportunity of acting on hemorrhage coming on may not be lost.

CHAPTER XXI.

ON DISRUPTION OF THE PLACENTA.

In extracting the placenta, it sometimes happens that a portion or portions of the mass remain adherent to the uterine surface — a state implied by the term disruption. Disruption of the placenta, whether occasioned by unskilfulness, or the firmness of the medium by which the placenta is united to the uterine surface, occurs more frequently than we are disposed to imagine. The effects of this injury are always dangerous, and very frequently fatal. Nearly all the cases which I have had an opportunity of seeing could be traced to mismanagement; and the many serious results which I have known the rash and unskilful removal of the placenta to occasion, justify me in alluding very strongly to this point, Several of the individuals thus circumstanced died, and the lives of the others were reduced to the most imminent peril. Their recovery was slow and imperfect.

When the first few hours have elapsed after the delivery of the child, the os uteri, though soft and open, commonly refuses admission to the hand, unless, indeed, the great bulk of the secundines is left behind; a circumstance which can very rarely happen. If a manual separation of the placenta has been effected, and it should appear, on inspecting the mass, that a large part of its substance is still adherent, the portion should not be suffered to remain, unless the os uteri has undergone a firm contraction, for though the

evils incident upon its decomposition may not yet have appeared, they will sooner or later occur. The attempt, however, must be made immediately after delivery, or it will not succeed. Unless, therefore, one or more fingers can be passed in utero with tolerable facility, so that, aided by counter pressure, they may reach the offending mass, it will be far better to leave the case to nature, and by suitable treatment meet the symptoms as they respectively arise, than incur the risk inseparable from a forcible introduction of the hand.

It is supposed that the placenta may be absorbed by means of the uterine vessels. Such appears, from Dr. Merriman's communication on the subject, to be the opinion of Professor Naegele.* I have certainly known cases in which the entire placenta, after the expulsion of an immature fœtus, and large portions of the structure, after the delivery of a mature child, have been left in utero, without any part of the detached mass appearing to come away subsequently, either in a fluid or partially dissolved state; the lochia being natural in quantity, colour, and smell. In one instance, a case of morbid adhesion, the practitioner, in attempting detachment, was aware that at least one half of the placenta remained in close connexion with the uterine surface. He was consequently much alarmed, and watched his patient narrowly. His apprehensions daily decreased, the patient recovered in the ordinary time, and no discharge, except healthy lochia, was observed to escape. How is this to be explained? Assuming that a considerable part of the placenta remains in utero, and does not pass away per vaginam, either in a solid or liquid and decomposed form, it must necessarily be absorbed; but how can the blood vessels,

* London Medical Gazette, No. 58, p. 189.

opening upon that part of the uterus which corresponds to the placental site, act as absorbing powers when they are plugged with coagula, sufficiently so at least to render the transmission of any *substance* through their calibres physically impossible? Granting, therefore, that absorption really takes place, it must be allowed to be a rare occurrence, and can only be effected by means of the proper uterine absorbents. In a great majority of cases, a very different process will ensue.

It is an undisputed point, that a portion of placenta, when left in utero, is usually cast off in a decomposed state, after a certain interval of time; but although the substance is progressively diminishing in bulk, the period when the remaining or the more filamentous part is cast off, varies materially, from a few hours even to a few days. In one instance I examined a third at least of the placenta, having a shaggy appearance, which was expelled, after dangerous and repeated hemorrhages, so late as the twenty-second day after delivery. It is singular to observe the variations in point of time, at which the putrefactive process commences in different instances. This variation depends upon the closeness of connexion between the maternal portion and the corresponding uterine surface. I have found several of these specimens from the close or indurated state of their organization, not separable either by the finger or by long maceration—but I have more frequently observed the structure to retain its ordinary consistence. Allowing, however, that the texture is unnaturally firm, still, unless the utero placental circulation be in some measure carried on, decomposition cannot long be resisted, the mass being more or less exposed to atmospheric influence. The entire placenta is said to retain its vitality for a longer period after a premature than after a mature ex-

pulsion of the child. Ramsbotham relates an instance in which the placenta, in a case of premature expulsion of the fœtus, was expelled in a healthy state at the expiration of a month. It is far otherwise at the full period; though even then I have known the placenta cast off at the end of a week, without decomposition having ensued. Such an exception is not to be expected. The late Dr. Gooch mentioned in his lectures two fatal cases, in one of which he extracted the placenta twenty-four hours after delivery, and in the other forty-eight hours after, and in both instances the placenta was putrid. If decomposition has been found thus early in the entire placenta, the putrefactive process will, cæteris paribus, arise still earlier when the mass has undergone disruption. In one case of disruption, however, the great bulk of the placenta was left morbidly adherent, and by the violent and long continued action of the uterus, was partially detached, and gradually forced through a contraction which subsequently formed about three inches above the os internum. Here the decomposition was inconsiderable.

It has already been observed, that a retained portion of placenta is usually cast off from the uterus in a decomposed state. To this law of nature, however, an exception must be taken. The exception has reference both to the ordinary form of morbid adhesion, and also to a peculiar organization of the retained substance, occasioning protracted and even fatal cases of hemorrhage, which has not, I think, obtained from any of our obstetric authors a distinct notice. Although a considerable part of the placenta may sometimes be found in morbid association with the uterine surface, it more commonly happens, that whilst the great bulk remains perfectly healthy, a circumscribed portion only shall have become disorganized, and so firmly and intimately interwoven with its

connecting surface as to leave no distinct line of demarcation. Under these circumstances, whilst the placenta is being detached by means of the funis a portion of the mass may remain firmly adherent. Still, notwithstanding the closeness of the connecting medium, material difficulties may be overcome by a skilful and deliberate proceeding. Instead of the retained portion being cast off by the progressive contractions of the womb, the connexion may be sufficiently close to resist these efforts of nature; the organ remaining bulky, and the vessels, supplying the extraneous body, unusually large. If the hemorrhage is inconsiderable, and the constitutional energies unimpaired, the mass, by acquiring an increased degree of organization, presents a florid hue, not unlike a fungus growth, in place of the black and offensive structure which characterizes a disrupted state of the placenta. Moreover, the retained portion may become so far identified with the lining membrane of the uterus as to render a distinct and perfect disunion impracticable. Unless the mass be completely walled in, vessels will be exposed; and though decomposition may not take place, hemorrhage will necessarily arise; and as the uterus cannot be perfectly contracted, the cessation of the hemorrhage must entirely depend upon the formation of coagula within the vessels. On the clots being displaced, the effusion will be renewed from time to time; but so far from occurring immediately after delivery, several days may elapse before it appears. The dissections of women who have perished from hemorrhages at different periods after delivery, fully establish my assertions. In one instance of this kind, hemorrhage began on the third day after delivery, and, with the exception of a few short intermissions, continued during a period of five weeks, when it terminated in death. On inspecting the body, a tumour of rather florid colour and the size of the largest walnut, was found firmly adherent to

the sides of the fundus uteri at its highest part; the lining membrane covered the greater portion of the mass, though not its centre, which was ragged, and vessels could be traced opening upon it.

The usual course of nature is very different to the description just given. In considering the ordinary circumstances of placental disruption, it may be observed, that the danger likely to result will be three-fold. 1. Hemorrhage, occasioned by the successive exposure of the extremities of the blood vessels. Life may terminate from this cause at any period. 2. Irritative fever, arising from absorption of putrid matter. The result, when fatal, usually takes place from the eighth to the twelfth day—sometimes not until the third week. This and the first cause may exist simultaneously. 3. Inflammation, and subsequently suppuration of the venous and lymphatic systems of the womb. Inflammation may commence at any period, from a few hours to some days after delivery; usually, I think, about the second or third day; but in this respect great difference prevails. In speaking of phlebitis uterina, which may occur after any labour, I shall strictly confine the few remarks I have to make to that form of the complaint which arises from placental decomposition. The cases reported by Dr. Lee,* do not appear to have been connected with placental disruption or decomposition; and in those in which I have had an opportunity of making examinations after death, suppuration has not been detected in the uterine veins. The lymphatic system, in these instances, has appeared more immediately affected than the venous. In one case, although attended with phlegmasia dolens, there was no inflam-

* See Dr. Lee's excellent Pathol. and Pract. Researches on uterine inflammation in puerperal women, Med. Chir. Trans. vol. 16, part ii, p. 377.

mation of the veins. That inflammation of the absorbents not unfrequently arises in the puerperal state, is distinctly shown from the researches of Messrs. Tonellè and Duplay. There can be no doubt that both systems are occasionally affected with inflammation, and produce the same train of symptoms. In the majority of instances of *general* uterine inflammations occurring after delivery, the veins, both the spermatic and the hypogastric, are more frequently affected than the lymphatics. The inflammation commences at the extremities which corresponded to the placental surface, *is confined for the most part to that side of the womb*, and extends to the iliac and femoral veins in the one direction, and to the vena cava in the other.

The local symptoms which arise from a portion of placenta being left in utero, are by no means uniform. First, as to pain. If the portion retained be very small, its presence may not be evinced by pain—although so long as a portion remains adherent, perfect contraction, at that part of the uterus, cannot ensue. In other cases, pain, having an irregular character, and at first attended with the expulsion of coagula, will be observable. The pain, mainly occasioned by the efforts made to detach the retained mass, will correspond in degree with the energies of the constitution and the firmness of the adhesion. In one instance, in which the connexion was too close to be separated by art, most forcible pains, having scarcely any intermission, ensued; but the softer parts only were detached; the greater part of the mass resisted the natural efforts. Secondly, as to the discharge, and the condition of the uterus. For some hours after delivery, the effusion varies little in appearance from an ordinary uterine hemorrhage, or the lochial discharge; but as decomposition advances, the discharge, in which shreds of the placenta are

occasionally seen, will proportionably acquire a dark and fœtid character; sometimes it is black and offensive in the extreme. In other instances, though attended with a violent draining, a renewed hemorrhage of florid blood has occasionally occurred; but this form of the discharge is far less common than that just alluded to. The discharge, however, so far from being excessive, may not only be trivial, but even less than usual, and almost watery, a circumstance which has in some instances appeared to me referrible to the depressed state of the vital energies. But even here the discharge is exceedingly offensive. In other cases, it will be trifling, or entirely suspended, in consequence of inflammation supervening. When it is suddenly suppressed accompanied with tenderness, hardness, and tumefaction of the region of the uterus, an increase of fever, and flaccidity of the breasts, the existence of inflammation cannot be doubted. In rare and mild cases, a puriform discharge has escaped from the vagina. Again, the uterus may be firmly contracted, (excepting at the parts where the mass adheres), independently of inflammation; or it may be so flaccid as to occasion but little sensation on pressure. A material variation may also be observed in the size of the organ at different times, since under a continued discharge it may become relaxed after it has been firmly contracted. With these states of the uterus, phlegmasia dolens is not unfrequently associated. The constitution very soon takes the alarm. Here the symptoms are frequently those of irritative fever; but, in an aggravated state of the disease, they will be found to resemble those which characterize peritoneal or typhoid fevers. Most of the following symptoms may be observed, though there may not be a complete assemblage of them in any single case. The sensorium is early affected, as denoted by pain in the head and wandering of mind—an anxious, pallid, or sallow coun-

tenance, vomiting, rigors, thirst, heat and dryness of skin, great rapidity and feebleness of pulse, flaccidity of the breasts, (for milk is rarely secreted), tremors, which, when the uterine pain is severe, pass into violent convulsions, and sometimes augmented sensibility over the hypogastrium. The bowels are at the onset confined, but diarrhæa frequently prevails in the course of the complaint, As the disease advances, there is delirium or stupor, slight but uninterrupted convulsions of one or both arms, and sometimes the face, a dry and brown tongue, lips and teeth covered with sordes, a puffy and tumefied state of the abdomen, fluttering of the pulse, and involuntary evacuations.

In the treatment of these cases, five points claim our attention. 1. To arrest hemorrhage, and to obtain the detachment of the adherent portion. 2. To correct fœtor, and obviate, as far as possible, the effects of decomposition. 3. To allay inordinate pain and irritation in general. 4. To support the constitutional energies. 5. To remove inflammation of the venous and absorbent systems, when found to exist. In accomplishing the first indication, the great object will be, to promote the uniform contractions of the womb. Respecting the artificial separation of the adherent portions, I need only remark, in addition to what has already been stated, that whilst rashness cannot be too much deprecated, we should not be justified in abstaining from a cautious attempt, should a favorable opportunity occur, and the mass be within reach of the fingers. This will depend upon the degree of contraction which the os internum and uterine cavity have undergone. Burns suggests plugging the vagina, and even the os uteri, in order to confine the blood and excite the uterine contractions. Leroux, indeed, advised the tampon to be introduced quite within the uterus, to fulfil a similar intention. The safety of

this practice admits of question. In a case of fever from placental decomposition to which I was called last year, the uterus, on the morning of the nineteenth day after delivery, was so dilated, and its parietes so lax, as very intimately to resemble the distended bladder. The organ had lost all power of contraction, the fluctuation within it was exceedingly distinct, and a gush of black and most offensive liquid blood escaped whenever a slight pressure was made over the abdomen: in the evening, the quantity expelled during a few minutes pressure filled a pint basin. The relief thus obtained was very striking, the constitutional symptoms subsided, and uterine contraction was so far established, that not more than about an ounce of fluid was discharged when I renewed the pressure on the following day. The blood was probably confined by a coagulum lying over the os internum. In this case, I believe that nearly one half of the placenta had been left in utero, in attempting a manual separation. From this and other cases, I am of opinion that, except in effusions purely sanguineous, the plug will be quite inadmissible, and indeed not here unless the uterus has acquired a moderate degree of firmness. To be assured of this, when doubt exists, the left hand should be passed into the vagina, and by gently raising the uterus and directing it towards the abdominal parietes, (the right hand being at the same time applied to the hypogastric region), the point may be satisfactorily ascertained. In those discharges which arise from the solution of the softer parts of the placenta, the plug must on no account be employed, or the discharge will be confined, a larger quantity of it exposed for absorption, and the patient subjected to additional danger. Unless tenderness forbid it, the application of a bandage and firm compress, to prevent the uterus from relaxing materially under the discharge, will be highly necessary, and infinitely safer than the plug. Tepid injec-

tions of chamomile infusion, to which a small quantity of the solution of chloride of lime or soda may be superadded, must be very sedulously employed; but when the fœtor is somewhat diminished, the antiseptic injections may be discontinued, and cold injections of alum and water substituted. A gum elastic bottle, or the improved vagina syringe, to which an elastic tube may, if needful, be appended, will be found to answer for this purpose. But whatever instrument is used, its point must be cautiously conveyed within the os internum, or the liquid may not penetrate beyond the vagina. In the absence of a proper nurse, it is essential that the practitioner attend to this himself; otherwise, it will be done in a manner so imperfect as to be almost nugatory. Much will depend upon attention to general cleanliness and ventilation; disinfecting the apartment, from time to time, by the chlorides, and sponging the skin, when hot and dry, with vinegar or pyrolignic acid, properly diluted, and tepid. The linen should frequently be changed, for when the discharges are suffered to accumulate about the person, or to remain in the apartment, independent of the influence of so noxious an atmosphere upon the nervous system, the smell is so disgusting, that the patient, if not deprived of consciousness, becomes loathsome to herself as well as to all around her.

Respecting constitutional treatment, I would premise, that when vomiting is not present, a trial may be given to the ergot of rye, especially *soon* after delivery. As a general principle, mild aperients at the commencement of the fever, with acids, subacid fruits, effervescing draughts, and cooling beverage, with nitrate of potash in solution, should constitute our chief resources. If the symptoms do not speedily subside, the increasing depression of the nervous system will demand a

corresponding stimulating treatment. For this purpose, the sulphate of quinine, aromatics, volatiles, ammonia, musk, and camphor in large doses, may be severally employed. When restlessness is urgent, the acetate of morphia may be exhibited, and when diarrhæa or vomiting prevails, solid opium is indispensable. In the advanced stages of the disease, the patient perhaps resolutely refuses medicine. In such instances, a few drops of laudanum may be given, concealed in port wine, or employed as an enema. A blister may be applied over the epigastrium, and a liniment, composed of oil of turpentine and soap liniment, liberally rubbed over the uterine region. I have noticed the best possible effects succeed the last mentioned remedy. In one instance, apparently desperate, the abdomen, puffy and as large as before delivery, was rapidly reduced by its use. In another instance, sensibility was quickly restored by its application. Independently of being an excellent external irritant, it also acts upon the kidneys. It sometimes occasions considerable pain—a most desirable circumstance when much stupor prevails. The extreme debility which accompanies this condition of the system, renders it essential not to administer any purgatives after the first day or two, unless with the utmost circumspection, and of the mildest nature. Simple enemata are preferable to opening medicine taken by the mouth. Wine, or fresh malt liquor, as well as animal broths, sago, jellies, &c. will be indispensable, when the discharge is very profuse and the exhaustion considerable. Glysters of strong broth may also be very necessary. Indications of mere increased uterine sensibility, will give way to simple and soothing treatment; but actual hysteritis affecting any portion of the uterine structure, must be met by a more energetic practice. General bleeding, however, is very rarely admissible in inflammation originating from the presence of placenta, and cannot be undertaken with

too much caution. Should there be much pain in the back, eight or ten ounces of blood may be abstracted by cupping the loins; otherwise the application of leeches both within the vulva and over the hypogastrium, is much to be preferred. The abdomen may be fomented, and a large and soft linseed poultice, (if its weight can be borne), afterwards applied. Relief will also be obtained by injecting into the uterus a tepid decoction of poppy heads, or a weak solution of the extract of belladonna in warm water. The French practitioners have eulogized the action of mercury in inflammation affecting the uterine structures. I have seen its full specific effects obtained within a short time, without any relief to the symptoms. Dr. Lee makes the same observation. I shall now very briefly allude to the fatal cases with which I have become acquainted.

Case 1. The funis was torn away, and the placenta partially detached by a midwife. The patient sunk from the hemorrhage, after the lapse of about two hours. At this moment, and not earlier, a competent practitioner was called in.—Case 2. A description of this case has been given in page 202. The patient sunk from hemorrhage on the fifth day after delivery, and after death a large piece of placenta was easily withdrawn from the uterine surface.—Case 3. After repeated hemorrhages, the subject of this case, (alluded to in page 209), died under an attack at the end of the fifth week. A retained portion of placenta, about the size of a walnut, which had acquired a degree of organization, was found at the extreme part of the fundus. The uterus was very healthy, and, indeed, every other part of the body.—Case 4. The patient died from the injury she sustained in consequence of a rude and imperfect manual extraction of the placenta by a midwife. Death occurred on the eleventh day, after continued, but not very violent

uterine discharges, attended with the constitutional symptoms of placental decomposition, and immediately upon the action of a purgative. On post mortem examination, the brain was found unusually white, the heart and vessels nearly exsanguineous, and the uterus as large, and widely dilated, as it commonly is immediately after the expulsion of the placenta, before any degree of contraction has ensued. A number of pieces of placenta were still firmly adherent to the fundus uteri. Independently of these appearances, the body was very healthy. In the labour which preceded this, a twin delivery, I attended the patient, and had to separate the placentæ on account of hemorrhage.—Case 5. I accidentally saw this case about the twentieth or twenty-first day after delivery, an hour before the patient died. At this time, the symptoms appeared of a typhoid character. The practitioner candidly informed me, that in a manual separation of the placenta he had left about a third of the mass adherent. The whole surface of the fundus, and part of the body of the uterus, were studded with small masses of placenta in a black and offensive state, which did not separate by maceration.—Case 6. In this instance, marked symptoms of phlebitis uterina succeeded a violent separation of the placenta. Death happened a week after delivery. No examination took place. Case 7. The subject of this case (detailed at page 196) died from irritative fever on the thirteenth day. A piece of placenta was found morbidly adherent to the fundus uteri, and the organ was as firmly contracted as the placenta would admit of. The body was healthy in all other respects.—Case 8. A detail of this case will be found in page 197. For the first few hours after delivery, the discharge was sanguineous, subsequently assuming a pale colour, and of the most offensive odour. The uterine pains became most distressing, the abdomen flatulent, accompanied with vomiting and stupor, (but not perfect insensibility), constant twitchings, and occasionally

strong fits of convulsion. Death occurred on the eleventh day. On examination post mortem, the uterus, seven inches in length and five in breadth, was perfectly healthy in structure. A layer of placenta, nearly circular and three inches in diameter, very fibrous, and rather white in appearance, adhered somewhat tenaciously to the anterior part of the fundus. The placenta was covered with a thin purulent looking fluid, arising no doubt from the solution of its softer parts, since neither inflammation nor suppuration could be detected in any of the uterine vessels. The intestines, peritoneum, and viscera generally, were preternaturally white and bloodless, but otherwise quite healthy.—Case 9. In this case, the placenta, on the delivery of the child, was retained in utero by a very circumscribed portion, the great bulk having been resting in the vagina six hours. Had the practitioner passed his whole hand, instead of acting by means of two fingers only, the separation would probably have been perfect. On the third day a rigor appeared, succeeded by dimness of sight, delirium, involuntary evacuations, a tympanitic state of the abdomen, and a fatal termination on the seventh day. On dissection twenty hours post mortem, the os internum appeared very purple, and almost gangrenous. The uterine cavity was covered with a rough, shaggy substance, and an oblong portion of placenta, two inches in length and one in breadth, adhered strongly to the fundus. The whole organ was bulky and uncontracted. Other fatal cases, very similar in kind to the foregoing, might be stated, but their history remains somewhat imperfect. I might here subjoin a list of cases having a contrary termination to those just described—but this is scarcely necessary, since it would only be a repetition of what has been already stated, in pointing out the treatment best adapted for the different states of the system, or, I should rather say, of the uterus itself, since we are too

much disposed to direct our attention to the *effects* rather than the *cause*—thus giving to the source and origin of all the mischief a subordinate consideration. In reference to the successful instances of treatment, I will only observe, that in three of them the funis was torn away, and I believe one half of the placenta was left adherent by the imperfect detachment. The patients were reduced to a state apparently the most hopeless. Irritation and diarrhæa, succeeded by phlegmasia dolens,* protracted the illness in each patient for many weeks, and recovery was very tedious. In two of these cases, the pressure of the liquid and decomposed parts of the placenta, which had accumulated within the uterus, was so great upon the bladder, that the viscus had lost its contractile powers, and I was obliged to employ the catheter for many days. May not retention of urine, therefore, be considered an occasional symptom of this affection? The little notice we find of this irritative fever even in our best works upon obstetrics, justifies me in saying that the subject has been very lamentably neglected.† With every deference to a respected author, Dr. Ramsbotham, I cannot altogether agree with him in two most important points of practice. Under frequent and

* My own observation coincides with the opinion expressed by Dr. Merriman, that this disease frequently follows preternatural births. I have known it succeed turning cases in several instances. It is worthy of notice, that the painful swelling of the leg appeared in these cases of placental disruption, when the discharge became very offensive. The same swelling was noticed in a fourth case. Perhaps there is no complaint, the nature of which has involved more discrepancy of opinion than phlegmasia dolens. I could not from these cases but acquiesce in the old notion that a depraved state of the lochia acts as an occasional cause, confirming the idea of two distinct forms of the disease: the one affecting the absorbent system, and the other the venous, constituting phlebitis uterina.

† For the best account, see remarks, with cases, by Dr. Ramsbotham, in his valuable Practical Observations, page 161, and seq. A short but faithful description of this affection is contained in the Practical Essays of the late Dr. Clarke, page 90. Reference may also be made to Hamilton's Select Cases.

active pains, Dr. R. observes, "I should not attempt to counteract these efforts by large doses of opiates; I would rather allow them their full scope, in the hope that uterine action may expel the adherent mass." When these contractions are uniform, it will be proper to abstain from opium in large doses; but in several of the cases which have come under my observation, there was a distinct circular contraction below the placental site, which rendered the employment of opium indispensably necessary. This spasmodic contraction, which I believe to be a frequent occurrence, may not entirely cease until relaxation arises, as the harbinger of death. Dr. Ramsbotham, who would not employ stimulants until the disease is advanced, also observes, "There is always too much heat and arterial action to allow the free use of wine." If I may be permitted to draw any general inference from the result of my own individual experience, I would remark, that when the symptoms do not speedily diminish under the common febrifuge treatment, we ought to commence the stimulating plan before the patient is so reduced by irritation as to render any plan nugatory; for, as Clarke truly observes, "When the complaint has been long neglected, no remedies will avail to avert the death of the woman." After any material hemorrhage, or unusually copious draining, a stimulant treatment should from the first be employed. In this opinion, also, I am fully borne out by Dr. Clarke. But to the testimony. What is the result of dissection in these cases? In nearly all my cases, no disease or vestige of inflammation has been detected; on the contrary, the body has seemed drained of its blood. The state of the system differs little, except in aggravation and the presence of a putrefying mass, from that described by Dr. M. Hall, in his Researches, as the result of losses of blood; and the necessity of a stimulating practice here, is now universally ad-

mitted. That inflammation may arise, either as the result of decomposition, or from the frequent efforts the uterus makes to eject the mass from its cavity, I have already allowed*—but in such cases, it is known by its own appropriate symptoms, and must be treated accordingly. That this is not the ordinary result of placental disruption, has, I trust, been satisfactorily established. When the placental mass cannot be extracted, the grand desideratum is *early* to pursue the treatment which has been recommended; especially to deprive the putrid discharges of their noxious effects by disinfecting them as soon as they are formed.† To this I mainly attribute the favorable termination of several cases which I considered at the time beyond the resources of art.

* Inflammation is not easily provoked in this condition of the uterus. In speaking of the plug, page 114, a case is mentioned in which a third part of the placenta was expelled, after repeated paroxyms of pain and dangerous hemorrhages, at the end of the third week. The patient was also labouring under irritative fever, from a progressive decomposition. The great bulk of the placenta, at the period of delivery, was unusually soft, and was disrupted under an inconsiderable effort with the funis.

† The Chloruret of Soda, in the proportion of one part to fifteen of water, is perhaps the most appropriate remedy for uterine injections, and the chloruret of lime for disinfecting an apartment. The former is highly eulogized as a medicine in typhoid states of the system. See Alcock's excellent Essay on the use of the Chlorurets.

CHAPTER XXII.

ON THE STATES OF THE UTERUS AFTER DELIVERY.

When a labour has been properly conducted, the womb, immediately on the disengagement of the placenta, ought to acquire a firm, thick, and globular feel; resembling in size an ordinary fœtal cranium, and more or less retreated in the pelvis, the fundus and a portion of the body of the organ being situated above the brim. If this be not the case, the organ cannot have acquired the natural degree of contraction. Its state should in all cases be carefully determined by placing the hand over the hypogastrium. The finger also should be passed into the vagina, to ascertain that the perineum remains entire, that no portion of the membranes is left behind, and that the uterus has not become partially inverted; for, although complete inversion may in most persons be detected by placing the hand over the pubes, it is possible that the fundus and sides of the organ might be materially depressed, somewhat like the bottom of a wine quart, as described by Gooch, (a condition denoted by considerable pain), when an external examination might only lead to a suspicion of the occurrence. If in a very fat person, the uterus cannot be distinctly felt by simply placing the hand over the abdominal coverings, two fingers of the left hand may be passed into the vagina, and the organ elevated towards the surface, in order that by means of the right hand applied over the hypogastrium, its state may be determined. When the organ has sunk unusually low in the pelvis, I have sometimes ascer-

tained with great certainty its degree of contraction, by passing the finger into the vagina. The uterus is found in several different states after delivery.

First—the small contracted, or tonic state.

Secondly—the large contracted.

Thirdly—the large and soft, or atonic state.

Fourthly—the small and soft,

or these states combined, as under spasm, or alternating together. In almost all cases, the uterus varies in its degree of contractility for some hours after delivery, particularly in persons who have borne many children; but though the organ softens at intervals, its parietes undergo no distension, since the discharges, whether liquid or coagulated, are natural in quantity.* The first, viz. the small or tonic contraction, is the only state that can be considered safe; and even here the organ is liable to become relaxed, as well as to the exception stated by Dr. Gooch. The large and contracted womb is generally unattended with risk; for even should it contain extravasated blood, the quantity must be very trivial. The large and soft, or atonic state of the uterus is imminently perilous, and though usually the result of a copious hemorrhage, may possibly exist when the discharge is inconsiderable, since the vessels may be so completely plugged with coagula, as, in a feeble circulation, to resist a material effusion. The small and soft, though less perilous than the last mentioned condition, is accompanied with much hazard; as is also that state in which the uterus dilates, and contracts alternately; for, however firm the contractions of the uterus may actually be at a given moment, they may not remain permanent: under an hemorrhage

* I had intended to have illustrated the principal states of the uterus by drawings in my possession, taken from persons having expired soon after delivery; but I have abandoned the intention from a conviction that whilst the price of the work would have been increased, its utility would scarcely have been promoted.

the organ may undergo a sudden relaxation, and occupy almost as much space in the abdomen as before delivery, and thus constitute a state of extreme peril from which numbers have never recovered. Professor Foderè observes, "by sensible organic contractility the uterine tissue acquires the faculty of becoming rapidly very firm, then of spontaneously relaxing itself, and this alternately during a given time."* Another author remarks, "the uterus acquires in a short time a bulk equal to, and sometimes greater than that which it had before."† The remark may be extended to the first few hours after delivery. In these several states, until the permanent contraction, as well as the ordinary size of the womb, is obtained, the patient's life is necessarily exposed to the greatest danger. Nothing else can provide for her safety. Torpor or inertia occurring in the soft uncontracted uterus, either in its large or small state, may arise from premature attempts to bring away the placenta, from natural feebleness of habit in consequence of protracted suffering, or from over distension of the womb either by excess of the liquor amnii, by an unusual thinness of the uterine parietes, or by plurality of children, which by favoring the hemorrhagic action, and exhausting the uterine energies, produces a state of collapse. The sentiments of Foderè are aptly illustrative of our subject, "we must fear the loss of blood from inertia of the uterus when patients have borne a great number of children; when they have experienced during gestation either depressing moral affection, hemorrhages, or long diseases; when the expulsion of the fœtus and its membranes has been too prompt; and particularly when the uterus does not assume

* An essay on the consequences of the more severe forms of childbirth, by J. E. Foderè.

† Dictionaire de Medicine, article Metorrhagia.

the globular form, and the orifice of the organ remains soft and dilated. Sleep is not less dangerous in this state because of its sedative and relaxing effect, and the woman has need of the excitation of wakefulness, united to the assistance of art, to induce the necessary contractility of the uterus, without which the life of the patient would flow away with her blood."

Burns observes, "It is not unusual for the woman if not assisted to die within ten minutes after the birth of the child." "We must obstinately fight against death." I am acquainted with many cases of the kind which we are now contemplating. In one instance, occurring in the practice of a friend, in which the uterus was amazingly large and uncontracted, the patient died shortly after delivery. In the case of a lady whom I attended in her first confinement, the expulsion of the child seemed referrible mainly to the agency of the abdominal muscles. The patient, who had undergone acute suffering for many days previous, was totally unconscious of pain, though in other respects perfectly sensible, at the moment the child was born. But what was the consequence? The womb remained as widely distended as when it enclosed the fœtus; the hemorrhage was excessive, accompanied with vomiting and sickness. Pressure and cold applications were perfectly nugatory. I introduced my hand, and retained it in the cavity upwards of half-an-hour before contraction ensued. The placenta was quite detached. Professor Burns refers these hemorrhages invariably to the influence of the nerves inducing spasmodic action of some portion of the uterus, the cervix in particular. So strongly is he impressed with these views as to assert, that he should always expect to find this to be the case, unless the patient were moribund. Presumptuous as it may appear to differ from the statement of this very able writer, I must

be permitted to say that, although a partial contraction may affect different parts of the organ, (perhaps many times within an hour,) very severe cases of hemorrhage have occurred under my observation, in which the uterine relaxation has appeared to be universal.

HEMORRHAGE WITH A FIRM CONTRACTION OF THE UTERUS.

Whilst the uterus remains firmly contracted, it will preclude all probability of an active hemorrhage in the ordinary state of circulation. In a forcible state of circulation it may be otherwise. This condition of the system is fully considered in the work of a much lamented Physician, the late Dr. Gooch.* The subject does not obtain a distinct notice elsewhere. Dr. Gooch's observations apply to a peculiar form of hemorrhage occurring after delivery, and not incompatible with contraction, even under that small and firm state of the organ which commonly indicates security. This deviation is attributable to an extraordinary force and frequency of circulation which does not allow the orifices of the vessels to close. Of the correctness of this rationale I entertain no doubt, notwithstanding the attempt made by Mr. Roberton to invalidate his inferences. If this gentlemen's opinion be correct, that the hemorrhage is not attributable to the state of the circulation, but to a want of proper contraction at the fundus uteri; how can blood be discharged in quantity sufficiently great to reduce life to immediate danger at so late a period as three weeks after delivery, even when the uterus is apparently small and well contracted? I have seen several

* On diseases of females, chap. 5, p. 334, previously published in vol 13, part 1, Med. Chir. Trans.

such instances. The fact of menorrhagia having been directly fatal, when the uterus has proved on dissection to be as small as usual, the vessels only being larger than common with a trifling enlargement of the ovaries, is against Mr. Roberton's inference, and in favour of the opinion of Gooch.

I had an opportunity of noticing this species of hemorrhage in the person of a young lady of naturally spare habit of body. During her first pregnancy, she attained a degree of corpulency and robust health very remarkable, when it is considered that from the activity of the absorbent system, attenuation is for some months a characteristic symptom of gestation. After the disengagement of the placenta, although the uterus was reduced to as small and tonic a state of contraction as it ever attains at this period, the hemorrhage was for some time exceedingly profuse and was not restrained by pressure. The pulse was unusually strong and full when the hemorrhage commenced. In a case like this, the institution of physical treatment would be highly proper, particularly towards the close of gestation; but during labour the hemorrhagic tendency is to be subdued by observing a low temperature, cooling diet, perfect repose, and venesection if needful. This form of hemorrhage occurred in the practice of Mr. Porter, of this place, after the delivery of twins. When the hemorrhage commenced, the pulse was full and strong, and the uterus in a state of high tonic contraction. Within two hours the vital energies became so dangerously depressed as to lead us to contemplate transfusion. The patient was talking most incoherently, the pulse was apparently absent in the left arm for nearly two hours, and was barely perceptible even after the circulation in the right arm had been materially restored. The uterus nevertheless remained in a state of firm contraction. Dr. Gooch advises

the left hand to be introduced into the uterus *closed*, and the right to be applied open on the outside of the abdomen, so as to compress between the two the bleeding surface. If the practitioner, prior to the separation of the placenta, has ascertained the exact place of its connexion by attending to the direction of the funis, he will consequently better understand where the pressure should be made; and the funis by inclining towards that portion of the uterus to which the placenta is attached, whether it be to the anterior, posterior, or lateral surface of either side, will afford us the requisite information. In order to acquire this information, it may sometimes be necessary to pass the hand into the vagina, as the fundus uteri prior to contraction is too high to allow the finger to direct us with absolute precision to the point of attachment. The placenta is by no means uniform as to the site of its attachment. It is usually affixed to the fundus and partly to the body of the womb, more or less to one side, and I think more frequently to the posterior than to the anterior surface. But, however this may be, provided the great bulk of the mass is attached to the fundus, an inconsiderable portion occupying the body of the organ, the bleeding vessels may be included within our grasp, and effectually compressed.

CHAPTER XXII.

ON HEMORRHAGES ARISING SUBSEQUENTLY TO THE REMOVAL OF THE PLACENTA.

Of all uterine hemorrhages that form which supervenes upon the delivery of the placenta and is termed internal, concealed, or after flooding, is perhaps the most appalling, both as regards the suddenness of the seizure, the extent of the effusion, the rapid prostration of strength, and the frequency of the occurrence. "To two women dead from this cause, (observes Dr. Blundell,) I have been called in one night." These hemorrhages which do not arise in persons of lax fibre only, for no habit is exempt from them, are very materially influenced by the particular portion of the uterus to which the placenta has been attached, the contractions of the fundus being considerably firmer than the contractions below this part of the organ; but in all considerable floodings, whether external or concealed, the uterus usually acquires an unnatural degree of relaxation. There is a peculiar tendency in the blood to coagulate after delivery; and when the uterus and vagina are plugged with coagula, liquid blood may be poured out in utero and yet unable to escape, the clot lying over the os or cervix uteri being too firm to be displaced by the stream, and the walls of the organ too much enfeebled to squeeze it out. The effusion will thus continue gradually augmenting; and though a small stream may pass the coagulum, the greater part cannot escape, and a still

greater accumulation is the result. In severe cases the inertia is for the most part very general, yet not always. So partial has it been in some instances, that hemorrhage has been known to prove fatal when there has been no external discharge, the body and fundus being widely dilated, whilst the os uteri has retained its contractility even to the moment of dissolution. The attack usually occurs within the hour; and whilst the practitioner, who may not have left the house, is very probably congratulating himself upon the favorable termination of the labour, the suddenness of the transition from comfort to imminent danger, or even death, confounds both the friends and attendants. No man considers his patient safe so long as the placenta remains undetached. He is anticipating hemorrhage as the consequence of the detention, and when the bleeding is actually present, is on the alert to obviate and remove both the cause and the effects. The great difference between hemorrhage occurring before and after the expulsion of the placenta, consists in the mind of the practitioner being prepared in the one instance, but unprepared in the other. In the latter case, this imagined security contributes to his subsequent embarrassment, at a moment when self possession is so earnestly to be desired. Hence, (as Capuron observes,*) "that fallacious security which may impose upon an inattentive accoucheur, and allow the patient to perish before there is any suspicion of the danger which threatens her." The patient becomes pale, complains of being very faint, feels sick, perhaps vomits,—the heart beats feebly and rapidly,—the exhaustion progressively increases. The practitioner no longer finds the contracted uterus in hypogastrio; the abdomen is occupied by a soft and large tumour, occasioned by the uterus being distended with blood. There is little or

* Cours D'Accouchmens, p. 286.

no external discharge, the napkin being scarcely soiled, and the os uteri will be found more or less plugged up with a coagulum. To this circumstance may be attributed the entire want of suspicion which so often prevails in the mind of the practitioner, in concealed hemorrhages. The uterus, on griping or pressing it internally, conveys to the hand a soft and yielding sensation, and the blood contained within the organ, whether liquid or congealed, gushes out so forcibly, and in such quantities, as to occasion much alarm to the patient. The coagulum when very large acquires the shape of the uterus. On the cavity being emptied contractions ensue, for the most part only temporarily, as, under a renewed effusion, the mechanical distension returns with an exhaustion truly formidable and terrific.* In this manner the successive contraction and dilatation may alternate for some time. There is seldom any pain; and as the presence of pain characterizes contraction, so does its absence indicate extreme danger. There may be a single effusion only, or several in succession. A fluid and florid appearance denotes its sudden escape from the system; but when dis-

* Fatal events of this description may explain many sudden and apparently mysterious deaths. A very short time ago a lady died a few hours after delivery under fainting. It is very probable had the uterus been inspected, the catastrophe would have been accounted for. If in adverting to this subject, I may be permitted to pass from the more humble to the most elevated station in life, I would cautiously advert to the decease of an illustrious and lamented lady, feelingly alluded to by Dr. Ramsbotham. It appears from the public accounts, that on the birth of the child an hemorrhage rendered an immediate separation of the placenta expedient, and that after the lapse of two hours the patient was affected with restlessness, sickness, impeded breathing, coldness of the body, rapidity of pulse, and in two hours more expired. On a post mortem examination the uterus was found to contain a considerable quantity of blood, and to extend as high in the abdomen as the navel; and the hour glass contraction was still very apparent. The same appearances have been exhibited in other cases. It may fairly admit of a question, whether if the hand had been conveyed into the uterus, and its contractions secured, the result might not have been different.

charged of a dark colour, whether in a liquid or congealed form, it will probably have been detained in the flaccid uterus. As the first gush of blood is not taken so immediately from the general circulation as the subsequent discharges are, we rarely find it making a serious impression on the system. The collection of blood in the uterus may be so great, as to produce by its pressure on the neck of the bladder a total inability to void urine.*

Deceptive as this form of hemorrhage frequently is, the constitutional symptoms, whether the effusion be external or internal, are the same. Although the hemorrhage is active in its character the symptoms are often insidious in their approach, and will be found to vary in proportion as the blood escapes in a sudden or gradual manner, and as the sensibility and contractility of the uterus is active, or the contrary. The attack usually occurs within the hour, and the first effusion proceeding almost exclusively from the uterine veins, is seldom found to exert a serious impression; but it is very different with the subsequent attacks, which by making a direct demand upon the general system may, when suffered to continue, drain the body sufficiently to terminate existence. In hemorrhage occurring after delivery, the uterus, as already observed, is commonly in a soft and relaxed condition. But in *concealed* hemorrhage the organ will also be found very greatly expanded. The small and firm substance cannot be felt in the hypogastric region, and there is little or no discharge on the linen. The effects of the hemorrhage will be manifest on different organs; on the brain by delirium, giddiness, insensibility, oppression,

* This form of retention, in common with that which occurs about the fourth month, and at the close of pregnancy, is immediately removed by the introduction of the fingers into the vagina, and slightly elevating the uterus.

syncope, restlessness, dimness of vision, and singing in the ears; on the heart and vessels, by a pulse so rapid as to be nearly imperceptible, with irregularity and intermissions; on the stomach by retching and vomiting, perhaps by pain and a sense of constriction; on the lungs by mucus accumulated in the air passages, difficult and quick respiration, and faultering of the voice; and on the capillary system by defective animal heat, paleness of the face and lips, and the depressed and collapsed state of the features. Although there is a frequent sighing and yawning, and a desire for fresh air, we must be particularly careful to keep the head low, since if it be raised, even slightly, at such a crisis, dangerous syncope may occur. Blundell details the symptoms as follows: "a restless disposition to change posture, a long continued cessation of the pulse in the wrist, a gasping respiration, like that produced by running, and a jactitation of the arms and legs, joined with a feeling of the most oppressive anguish. From these symptoms associated with ordinary forms of inanition women seldom escape, nor must it be forgotten that they sometimes in a fainting fit die suddenly, or more slowly, without the harbingers of dissolution to fore-show the event." After describing the alternate rising and sinking for four or six hours before the patient is secure, he further observes, "But if the constitution be of that kind which ill sustains the loss of blood, or if the discharge be very great, then the woman may die; and she may either die suddenly, say in a few minutes, or, which is more frequent, she may live for one, two, or three hours after the first large eruption of blood, so that you have an opportunity of performing the operation of transfusion." Burns remarks, "The patient seems as if trying to awake from a slumber. The pulse sinks, the countenance becomes pale, the strength departs, and a fainting fit precedes the fatal catastrophe;"

or as Conquest observes, "If she be not speedily relieved she expires after one or two gasps, or a slight convulsive paroxysm." Death may result from a single hemorrhage, under a repetition of bleeding, or from exhaustion many hours after the hemorrhage has ceased; for if the vital powers have been exceedingly reduced, re-action may not be obtained, although life may be preserved several days.* The exsanguineous state of the vessels of the brain appears to be the immediate cause of death. It is of paramount importance, in the treatment of hemorrhage, to estimate accurately the effects produced upon the system; the quantity of blood lost, considered in the abstract, being of little moment. The amount of hemorrhage must not however be underrated; whilst the manner in which the blood has escaped from the vessels, whether rapidly or slowly, must be taken into account, for the system will bear a gradual draining even of long continuance, with comparative immunity from danger. A person in robust health will sustain, without materially depressing the powers of life, an hemorrhage that might be fatal to an individual differently constituted; though under a sudden effusion of blood a material effect may be produced even upon a vigorous constitution. The number of attacks, and the previous state of constitution, will also claim our attentive regard. Our prognosis, which should always be guarded, must be regulated accordingly. We may here notice the remarkable effects produced by hemorrhage when it occurs under particular conditions of the system, independent of parturition. When the system is in an enfeebled

* An old man of feeble habit, upon whom I operated for Lithotomy some years ago, experienced a very sudden and alarming hemorrhage about the sixth day, and although he survived three days, no degree of re-action took place. Even after other operations, amputation for instance, the shock and loss of blood may produce such an impression upon the system that the circulation shall never be restored.

state, as at the close of fever or other acute disease, an hemorrhage (intestinal for instance) comparatively trifling, and which in a more healthy condition of the body would produce no serious consequences, has frequently proved the cause of death, and this too even though convalescence should have been progressing apparently in the most favorable manner. These principles admit of a direct application to Midwifery; and when to natural feebleness of habit are superadded moral causes, such as excessive anxiety, or forebodings of personal safety, a trivial hemorrhage may exert a dangerous impression upon the system. In such persons even a slight hemorrhage should always be regarded with jealousy and distrust. The following cases may serve as illustrations of these principles. During the last winter I removed an adherent placenta in a very poor and feeble woman, whose life was reduced to a state of imminent danger, under a hemorrhage so trivial in degree as to be apparently quite unimportant, and re-action was not established until the following day.—A woman immediately on the birth of the child experienced a slight hemorrhage followed by symptoms of dangerous depression. The placenta adhered to the uterus rather firmly, and was separated by the hand, after which the hemorrhage was arrested. The whole amount of blood lost did not exceed a pint; the respiration however was so difficult, and the exhaustion so alarming, as to be regarded by two practitioners as the certain harbingers of death. Several hours elapsed before they ventured to quit the apartment, and during the whole of the day following the patient could only speak in a whisper. Her recovery was tedious, and for some time uncertain.—A lady had a prepossession that she should die in child-bed. After the placenta was cast off, a slight hemorrhage ushered in a most alarming syncope and exhaustion. Stimulants though actively administered failed to excite re-ac-

tion, and she died under two hours. Blood was effused in the uterine cavity, yet the quantity was not greater than a person under the ordinary circumstances of delivery might bear with impunity. Time would not admit of transfusion being performed.—In another case in which delivery had been accomplished under favorable circumstances, the practitioner was recalled after the lapse of about an hour, and before he could reach the house the woman had expired, though the quantity of blood lost in this case also did not exceed a pint.

CHAPTER XXIV.

ON THE TREATMENT OF AFTER HEMORRHAGES, WITH ILLUSTRATIONS, INCLUDING A CASE OF TRANSFUSION OF BLOOD.

What line of conduct ought we to institute in these cases? This is an enquiry of momentous importance, since the question of life or death is directly involved in it. For however satisfactory the state of the patient may have appeared,—suddenly an alarming seizure ensues,—she becomes faint, almost lifeless,—the practitioner is immediately recalled, and upon his competence and skill every thing will depend.

Two leading principles should influence our practice, the promotion of uterine contractility, and the maintenance of a tranquil circulation; since hemorrhage will arise in proportion as the womb on the one hand is inactive, and the circulation on the other is unduly excited. If excitement prevails, refrigerants internally may be advantageously administered; but under other circumstances, the Ergot of Rye will claim the preference; and opium in suitable doses when the exhaustion is material. The treatment should also comprise brisk frictions, either with the dry hand or with spirituous applications, rolling the hand over the uterus, pressing, grasping, and moderately

squeezing it through the abdominal parietes. Much depends upon the mode in which our manipulations are applied. We should grasp and rub every part of the body and fundus, since the points of placental attachment are quite uncertain. The uterus under friction usually hardens so as to expel any liquid blood, or moderately sized coagulum, which may occupy its cavity. But since the organ may again relax, even under the pressure of the hand, the friction should be diligently persevered in, and continued for a short time after the contractions appear to be permanently secured. The external application of cold and free air must not be neglected, whilst addititional relief will be obtained by the elevation of the hips, and placing the head in a dependant position.

When the usual treatment is unsuccessful, several expedients have been proposed for adoption, viz. the introduction of the hand, stimulating liquids conveyed within the uterus, and lastly the plug. That the tonic contraction (essential to the permanent cessation of hemorrhage and generally efficient) cannot always be commanded by external pressure alone, especially in fat persons, admits not of question. I allow that if the blood be in a great measure liquid, or the coagula which the uterus contains not very large, the cavity may be emptied by means of external pressure, and contraction will immediately follow. But when the organ is distended with a large and solid coagulum, perhaps as large as a fœtal head, the pressure may prove almost nugatory, since the uterine parietes cannot be brought into contact, and the clot receiving a stream of blood gradually increases in bulk even to an extent imminently dangerous to life. In such a state there may be as strong a necessity for passing the hand in utero as though the placenta were still retained, and

blood progressively accumulating.* The introduction of the hand is however an operation never to be resorted to except under a very pressing emergency; and in a great majority of cases mild treatment will effectually supersede this comparatively severe measure. But when gentle means fail to promote contraction, or when on the uterus being emptied by external pressure the distension is renewed from time to time under a fresh effusion, it will be far better to pass the hand into its cavity, making counter pressure by the other hand acting over the abdomen. Dr. Ryan, in his very clever manual, makes an observation when alluding to

* In reference to this point of practice, the directions given by the old writers on Midwifery are by no means satisfactory. Mauriceau, though aware of the dangers attending these hemorrhages, held very erroneous notions as to their treatment, and bled his patient by way of diverting the current of blood. He observes, "flooding is a more dangerous accident than any which may happen to a woman newly laid; and which dispatches her so soon, if it be in great quantity, that there is not often time to prevent it." Dionis writing on the same subject remarks, "It is always dangerous, and if the artist finds not a speedy remedy against it, the woman is sure to die on the spot." We find this author echoing Mauriceau's directions respecting the removal of coagula, when distending the womb. He suggests also that plethoric women should be bled before delivery, and advises a cooling treatment. He observes, that floodings do not always prove mortal, admitting at the same time that the patient generally dies. Chapman improved upon his predecessors. He says, "floodings after delivery are very frequent when nothing remains behind. I never bleed, but lay the patient very cool, almost naked, and cover her body with cloths dipped in water, or vinegar and water mixed, and without which the woman's life would be lost in a few minutes." La Motte declares the operator's skill almost useless when the flooding is in excess. Pugh advises the removal of coagula, when retained in the uterus, and the use of astringent injections. Hunter is almost silent upon the subject. Smellie applied cold and administered an opiate, and this appears to have been the practice of Dr. A. Hamilton. The introduction of the hand appears to have been but rarely practised in cases of this nature in the time of Leake. Such at least may be inferred, since we find this author speaking of styptic injections thrown up into the uterus as the last and most powerful application that can be tried for the patient's relief. Denman was decidedly opposed to the introduction of the hand in these hemorrhages, although he admits that he never attempted it. To modern authors we must refer for correct directions upon these important subjects.

this subject which appears somewhat contradictory. After admitting that the introduction of the hand is seldom necessary, he immediately tells us, that "by the hand on it, or shampooning it, we will succeed in causing it to contract as well as if we introduced the hand into the uterus." If these sentiments had governed my proceedings in several of the cases referred to, I cannot but think that fatal results would have ensued. And I make no doubt that in other instances, numbers of women have perished, who might have been saved if the hand had been conveyed and kept in the womb until its contractions had been effected. There is a vast difference between the use and abuse of our most valuable agents, be they medicinal or operative. It is with great propriety therefore that Dr. Blundell discommends the practice of conveying the hand into the uterus, "unless there be inexorable need, for lacerations now and then occur." Ashwell re-echoes these sentiments, by observing that "the introduction of the hand is always attended with risk, and it cannot be less so when, owing to the exhausted and powerless state of the system, the uterus and vagina may easily suffer rupture or laceration."* Lacerations are usually associated with inordinate muscular action; and when we consider the opposite circumstances under which the organ is found in these hemorrhages, being soft and inactive, such an accident under prudent management seems most unlikely to happen. That the forcible passage of the hand may produce laceration, (and what may not happen from unskilfulness?) cannot be doubted; for when the degree of inertia is considerable, and the uterus very voluminous, the parietes are so thin† and unresisting, that if the hand be

* Pract. Treat. on Parturition, page 448.

† Can the fœtus, whilst in utero and the membranes unbroken, be heard to cry? If so, may not the uterine parietes be so thin, and

passed within the cavity it may be distinctly felt by the other hand applied over the corresponding part of the abdomen. But admitting this, the mere chance of laceration should not prevent our resorting to a manual operation when really necessary.* Inflammation is far less likely to arise from the mere

the abdominal integuments so exceedingly distended, as to account for the phœnomenon? Many statements of this kind have been published in the continental journals. My friend Mr. Jukes, though sceptical upon the point in question, writes to me as follows, "I have a patient who *says* the crying of the child in utero for three days before the accession of labour was at intervals most distressing to her." In quadrupeds the facts are said to be strong in confirmation of this opinion.

* Twelve cases of rupture of the uterus, which Mr. Vickers had an opportunity of seeing in the course of his obstetrical practice in this town, were all associated with violent uterine action, and the majority of the patients had experienced previous difficult labours. Like Dr. Ramsbotham's twelve cases, these all terminated fatally. Three similar instances are referred to in page 41. The laceration in two of these occurred during forcible pain. The third was the consequence of an external injury. In a fourth case (associated with great deformity from Malacosteon) the rupture happened under a similar action. The accoucheur had retired for a short time, and found on arriving with his instruments that the presentation had receded and the child could be felt in the abdomen. In a fifth the uterus gave way during a forcible pain before the practitioner could obtain the forceps. The patient died instantly. This termination, I am permitted to say, is to be referred to the forceps not being timely applied. The attendant twice deferred his own judgment to the suggestion of a friend. The resistance to the contraction of the uterus was at length inconsistent with its integrity. Important as it is to set forth the danger of instruments when untimely or unskilfully applied, it is a duty equally obvious to shew the converse. I could adduce other cases in confirmation of the opinion that laceration *usually* occurs under a forcible, and *rarely* under a defective action of the uterine system. If the numerous cases of rupture of the uterus, recorded in different periodical and other works, were collected together, a faithful deduction might be made applicable to a most important but unsettled point of practice. When this injury occurs after the sixth month of pregnancy, it is universally advised to pass the hand without delay through the rent, and deliver by the feet. But supposing hours and perhaps days have elapsed, and the contracted state of the uterus has resisted the introduction of the hand, is gastrotomy justifiable? Presuming that no doubt exists as to the nature of the case, immediately to resort to *this* proceeding, under a very depressed state of the vital energies, might be a most fatal measure: no plea can be adduced in support of it. Under a very languid circulation the utero-placental vessels if exposed would bleed but little if at all, and reaction must necessarily precede inflammation. But suppose the system has rallied and there is an occasional issue of blood externally,

presence of the hand, than from the application of any other stimulus whatever. The shampooning or kneading process, when long continued, may *possibly* endanger uterine inflammation—quite as likely to do so, I apprehend, as if the hand were cautiously passed into the organ and its contraction promptly effected. In aggravated cases of after flooding, upon the failure of ordinary remedies, Ramsbotham, Merriman, Burns, Hamilton, and almost all the highest authorities, sanction the introduction of the hand. Dr. Hamilton, in advocating the practice, appropriately describes the womb as being flabby, like wet paper, and strongly maintains the propriety of keeping the hand within the cavity until expelled by the contractions. He advises that coagula should be removed, lest they become putrid, and lead to a depression of the vital powers ending either in death or lingering debility. This conclusion is confirmed by experience; especially when we recol-

or that the abdomen is becoming tumid, painful and tender to the touch, (especially on moving the child), accompanied with constipation, vomiting, and rapidity of pulse; in short, if peritoneal or intestinal inflammation is detected *in its early stage* can this operation be recommended? Does the fatality of these cases warrant it? or are we to consign them to nature, aided by general and local bleeding, fomentations, and other medical resources. An instance, the result of an external injury, similar to the one here supposed occurred very recently, in the person of a woman advanced eight months in pregnancy. When we had finally determined upon the propriety of the operation, the patient was become so much worse that we could no longer recommend it. At such a moment conflicting testimony is most painful—and our best authors differ as widely upon the subject as possible. Hunter, Denman, Burns and others, discountenance the operation. Dewees and Conquest advise it. Danger is inseparable from any line of conduct. If on the one hand the child is suffered to remain amongst the viscera, inflammation will almost certainly result, and if a fatal termination be then averted, the patient will most probably sink under the tedious and destructive process of ulceration, which sooner or later will be inevitable. If on the other hand the peritoneum is opened, we shall probably encounter a copious effusion of blood, and lochia within the cavity, and the wound created may prove an additional source of danger. In either case the uterus may subsequently become gangrenous. It is much to be desired that we had some better defined rule of practice in situations involving so much responsibility and danger.

lect how greatly the uterus has been found distended by discharges in cases where portions of the placenta are retained. Merriman, who cites several important cases in confirmation, observes that large coagula act like the retained placenta, and must be removed by the introduction of the hand. Professor Burns observes "I have met with most obstinate and alarming cases, but I never yet have lost a patient from uterine hemorrhage after delivery, when I attended from the first, and I attribute this entirely to the prompt introduction of the hand." "The manual abstraction of coagula, if hemorrhage take place after the expulsion of the placenta, is of signal benefit, often of more advantage than retaining the hand longer in the uterus." This author also remarks, "what good can accrue from allowing coagula to remain? It cannot prevent the farther flow, for no vessels of such size as the uterine can be stopped in this way." This reasoning appears to be extended beyond its legitimate limits. The uterine vessels may assuredly be stopped by coagula, though it might be highly imprudent to calculate upon it. In cases of Asphyxia, in which manual assistance is very limited, it is our chief dependance. Conquest also refers to coagula in the uterus preventing contraction, and urges the propriety of evacuating them before the hand is withdrawn, in order that contraction may ensue. Capuron observes, if a coagulum stops up the orifice of the uterus, or if the neck of the uterus contracts spasmodically, whilst its body and fundus still dilated, serve as a receptacle for the blood which cannot make its escape outwards, this obstacle must be immediately removed, because it opposes the successive evacuation of the uterus, in which it is effused and collected, keeps the parietes asunder, and prevents contraction. It may here be remarked, that if under an hemorrhage the stomach rejects our most powerful stimuli, we have a double motive for this proceeding. The manner of perform-

ing this operation, and the object to be attained by it, are points of considerable importance. Dr. Hunter, after inculcating the necessity of great caution in introducing the hand, observes, "If you proceed too hastily, the struggles often produce such a gush of blood that the woman dies on the spot."* It should be understood that the hand is never to be conveyed into the womb but with the utmost care and delicacy. In the great majority of instances it should be regarded as a passive agent, intended to excite an action adequate to its own expulsion from the uterine cavity. A few minutes perhaps may not suffice, for under great exhaustion contractions will very slowly arise; a much longer period may be required. Time must be no consideration when life is at stake. It is generally needful to premise the evacuation of the blood whether liquid or solid; before this act is accomplished contractions may fail to arise. Whilst the hand remains in utero, pressure may be exerted over the vessels which corresponded to the situation of the placenta, and the great abdominal vessels, if needful, perhaps at the same time. With respect to stimulants conveyed within the uterus, Cruikshanks, it appears, recommended the introduction of a sponge moistened with lemon juice, or vinegar. Capuron advises the same treatment when friction and cold fail. It has been recommended by Evrat, that a peeled lemon should be conveyed into the womb, and the juice squeezed out, under the idea that the citric acid will irritate its surface. I have known lemon juice thus applied, but without the slightest effect being produced. The proposal to employ diluted mineral acids scarcely requires refutation. Merriman and others suggest that ice, or a sponge soaked in port wine, or cold vinegar, may be passed

* MSS Lectures.

into the vagina. If cold, when properly applied, has been unsuccessful, I should hold all such expedients as temporizing under a pressing emergency. Cold astringent injections, by means of the elastic bottle, have also been recommended. But if a stimulant within the uterine cavity is really needful *soon* after delivery, the hand, generally speaking, is preferable. In slight cases injections will be unnecessary, and indeed might detach coagula from such of the vessels as may have ceased bleeding. But in extreme cases where the uterus has been bulky and flaccid, I have known an active contraction ensue from the injection of very cold water, when the presence of the hand has failed to produce it. Gooch used to observe, "I am never happy when attending a labour unless I carry my elastic bottle with me." With respect to cold injections much will depend upon the time of using them, whether it be within a few hours, or a few days, after delivery. In an hemorrhage which continued nearly a week after delivery, I injected into the uterine cavity with marked advantage a cold solution of alum. The principle of the application is obvious. So long as the uterine parietes remain distended with blood, the patients' life must be in jeopardy, since on the least disturbance of a coagulum in the uncontracted uterus a fresh bleeding may ensue; but by thoroughly evacuating its contents it acquires its natural contractility, and thus provides for the patients' safety. In order to facilitate the coagulation of the blood in the vagina, a napkin properly folded should be in close approximation to the vulva. But when the stream is not arrested, it has been suggested to use the tampon. To plug the vagina must ever be attended with great hazard, far greater than when the os uteri is closed by a large coagulum. A question here arises, how long after delivery is the uterus susceptible of distension? For until it has lost this property

the tampon cannot be allowed. I am unable to determine this point. I should consider the plug inadmissible in most cases for the first few days; so long as the parietes are distended with sanguineous effusion, the plugging prevents its escape, subjects the practitioner to perplexity, and the patient to additional peril. Merriman, when speaking of hemorrhages generally, says, plugging is inapplicable when the bulk of the uterus exceeds a pregnancy of three or four months. Perhaps this rule, applied also to cases after delivery, is the safest that can be laid down; since I have found the uterus distended with blood so late as the third week. Assuming that this principle is correct, with what consistency do several of our most eminent authors countenance the tampon of sponge soaked in an astringent liquid and passed into the vagina, in an hemorrhage soon after delivery? since at no period so directly as at this does the uterus admit of a material accumulation of blood. I know that a very few weeks ago plugging was successfully practised by a friend of mine, in a case of hemorrhage, which occurred very shortly after delivery, the uterus being firmly contracted. But although a man having the fullest confidence in his own tact and discrimination, may, under his own vigilant and personal superintendence resort to this proceeding in this state of the uterus, still, after delivery at the full period it may be truly affirmed that as a rule of practice, none can be more fraught with danger; to borrow the language of Capuron, "most contrary to the principles of art and sound reason." I have used the plug with the best effect in an hemorrhage imminently dangerous, as late as fourteen days after delivery, the uterus being firmly contracted. More than once I think I have preserved life by the agency of the plug. To justify its application—some hours must have elapsed after delivery—the uterus should be well contracted and yet the

patient be losing blood to a dangerous amount,—and the practitioner must not quit the house. If the hemorrhage we are now considering should not prove fatal during the first forty eight hours, the patients recovery may fairly be expected; sometimes however the result is very different.—Mr. Ashwell once found the uterus measuring twelve inches, in a patient who died of hemorrhage eleven days after delivery.* I recently opened the body of a woman who died on the fourteenth day after delivery, in whom the uterus was as bulky as it ordinarily is when the child is just expelled. It contained nearly a pint of dark coloured fluid. Some years ago I delivered a poor woman in an arm presentation; I did not see her afterwards, but I understood from the practitioner whose patient she was, that she died on the twelfth day, after repeated floodings, under a very violent hemorrhage. A case occurred about a year ago, in which on the placenta being disengaged, internal hemorrhage ensued and the uterus became distended with blood. Under the application of cold and general treatment the bleeding was several times suppressed, but recurred at frequent intervals during seven days; the patient at length expired under an attack. The practitioner was not allowed to open the body. A friend of mine also recently saw a patient who died from hemorrhage on the tenth day after delivery. The case already detailed, in which so late as the nineteenth day after delivery the uterus was emptied of a large quantity of putrid blood, shows its capability of distension even at this remote period. Had a very effective pressure been applied in the fatal cases now alluded to, a different result might have been expected.

We have still another expedient for cases of sudden hemorrhage, viz.: in intercepting the current of blood through the inferior part of the aorta, a practice said to have been

* Ashwell on parturition, page 458.

first recommended by Ploucquet, and recently revived by M. Latour, in the Revue Medicale. When the contents of the womb are expelled at the full period of gestation, the coverings of the abdomen undergo a change from distension to collapse, the change being proportionate to the volume of the uterus, and to the sudden or gradual expulsion of its contents. The facility with which we shall distinguish the aortal pulsation will be governed partly by the above circumstances, but mainly by the spare or corpulent habit of the patient. Subsequent observation has confirmed the utility of this practice, notwithstanding the objection raised against it by Boer and others. We obtain an incalculable advantage, if by this measure we can directly arrest an alarming hemorrhage until the uterus has acquired an adequate contraction, or the ends of the vessels have become sufficiently plugged to resist a stream of blood, and allow of an oozing only. For even admitting that the bleeding should be renewed on the removal of the pressure, still a grand object is effected if the blood is retained in the brain and central organs during the formidable state of exhaustion. In the mean time our other resources can be deliberately arranged. An examination of the femoral artery will shew whether the pressure exerted over the aorta is sufficient wholly to arrest the current of blood. By permission of my colleague, Mr. Blount, I shall give, in elucidation of the point we are now considering, the detail of a case which occurred in his practice. "On the termination of a labour Mrs. W. was to all appearance quite comfortable. In about half-an-hour she complained of being very faint; her countenance was very pale, and anxious. There had been little or no external hemorrhage, and on placing my hand over the abdomen I could not distinguish anything resembling the uterus. By friction and compression some discharge was forced away, but no beneficial effect resulted; the hand was

therefore passed into the uterus, and a mass of coagula which distended its cavity cleared away. By this means, and by gently irritating its inner surface, contraction was promptly effected. Though the discharge had now considerably abated, the exhaustion was very great, the pulse being exceedingly feeble and frequent, and the patient appeared sinking. I now placed my hand on the abdomen just above the uterus, and, from the spareness of habit, easily distinguished the pulsation of the aorta, and made pressure so as to intercept its current of blood. This was continued with increasing advantage for half-an-hour, and as the patient was much revived I then withdrew my hand. Upon the withdrawal of the hand the sinking immediately returned, attended with giddiness in the head and a slight return of the hemorrhage. Pressure was again made for the space of two hours with the same good effects. Twice during this period I allowed the blood to pass the lower extremities, but with the same unfavorable results as before. A modified and less effective pressure was continued four hours longer, before it could be entirely dispensed with." Pressure has also been made over the aorta through the uterus whilst the hand has remained in its cavity, but the necessity for such a measure will I conceive rarely occur. I recently assisted Mr. Blount in the treatment of a case resembling the foregoing. Whilst pressure was exerted over the aorta, the uterine contractions were provoked by two fingers passed through the os uteri. Whenever the pressure over the vessel was withdrawn, there was an almost instantaneous return of hemorrhage and syncope, and some hours elapsed before the patient's safety was secured. Several very analogous cases are on record. The old and popular custom, spoken of by Mauriceau in particular, of applying rollers very tight round the upper and lower extremities, though on false principles, was evidently intended to confine

the blood to the centre of the body during an hemorrhage.*

During a state of collapse, when life is sustained by the slightest tenure and the hemorrhage has apparently ceased, the introduction of the hand is inseparable from danger. I feel the responsibility which attaches to this opinion; since, should internal bleeding be insensibly proceeding, the blood coagulating, and the clot gradually increasing in bulk, the patient through an inactive treatment may possibly be deprived of life. Under symptoms of present effusion, or on hemorrhage recurring with the return of action, we cannot hesitate how to act; further delay will be inadmissible. The ordinary means must be diligently and vigorously employed, and the hand is to be introduced into the uterus only as a matter of indispensable necessity, and in the failure of other treatment. But in extreme cases of collapse, it must be recollected how easily the balance of circulation is destroyed; that an agitation of the body, or a single gush of blood, will decide the awful issue between life and death, an issue which depends as frequently on the discretion as on the promptitude of the practitioner. In several instances of this nature the proximity between life and death has been very striking,

* In consequence of having witnessed many fatal cases of uterine hemorrhage, Mr. Mills, of Runcorn, has invented a contrivance for the purpose of making pressure upon the womb. It consists of a belt nine or ten inches in breadth and diameter, with straps and buckles, "permitting pressure to be made on the abdomen by means of a circular plate, also nine or ten inches in diameter, covered with leather, over the centre of which is a brass frame and screw, permitting the pressure to be increased or diminished at pleasure."* Time alone can determine the value of this contrivance. I fear it will not be found to answer the laudable object of the inventor. Although a high mechanical pressure may bring the sides of the womb into contact, it cannot command its contractions. A question indeed arises whether so powerful a pressure will not cramp the abdominal muscles, and the fibres of the womb, to such a degree as to prevent their natural contractions from taking place. It appears that a pad intended to answer the purposes of pressure was invented by Searle, several years ago.

* Lancet, No. 372, for 16th Oct. 1830.

and reaction established only after extraordinary efforts. Dr. Hamilton knew the pulse to disappear for twelve hours prior to recovery. Two similar instances will be found in the present work. It is far better that death should occur without interference, than directly under the disturbance which might be occasioned by the passage of the hand. Under this impression, a practitioner of this town acted with judgment in adopting other treatment in a case of this kind to which he was called three or four hours after delivery, the patient being apparently moribund; the uterus was distended with coagula, and death occurred in less than half an hour after his visit.—When the state of collapse evidently forbids the introduction of the hand, the attempt to stimulate the organ to contraction by other means must be steadily and perseveringly made. I subjoin an interesting case in which recovery ensued under circumstances of extreme danger. On the termination of a labour attended by one of my pupils, the placenta having undergone a favorable separation, a fearful hemorrhage took place, accompanied with vomiting, restlessness, and cold perspirations. On my arrival at the patient's house the external hemorrhage had ceased, but I found a large coagulum within the os tincœ, and the uterus soft and greatly expanded. Frictions, pressure, and cold applications, produced no degree of contraction. The Ergot of Rye was given and rejected, as was also brandy. The pulse at the wrist could not at all be distinguished, and I felt persuaded that instant death would have supervened upon any manual operation. Heat and stimuli were therefore applied to the extremities, the head placed low, and brandy given in small quantities. Two hours after contractions commenced, terminating in the expulsion first of a large coagulum, and secondly of an immense fleshy concretion as large as two ordinary placentæ; the membranes were imperfectly formed, but no

funis was apparent. Fatal results have been known to attend the expulsion of these concretions whether of the fleshy or lymphatic kind—The ordinary principles of obstetrics must be acted upon in such cases.

We cannot exercise too much watchfulness in reference to the ultimate safety of the patient, even when the hemorrhage has ceased and re-action is apparently established. There is in many cases a constant ebbing and flowing, our hopes at one time being raised, at another depressed. For whilst some persons after passing hours in a state of extreme danger have ultimately recovered, others again in whom recovery seemed progressing, as inferred from the cessation of flooding, the contraction of the uterus, the improvement in the pulse, the retention of food by the stomach, and unimpaired sensibility, from the defective re-action have suddenly sunk to the dismay both of the friends and the practitioner. Our vigilance then so far from being confined to the first two hours of re-action must be continued during a much longer period. The necessity of this precaution may be shewn by the annexed detail.—Elizabeth Wilsford, a woman of very feeble constitution, had been under medical treatment for dyspepsia during fourteen months preceding her delivery. On Tuesday, the 5th of April, labour pains commenced, and the child was born about eleven o'clock on Wednesday A.M. The placenta was expelled in the usual time after three pains. A flooding commenced almost immediately, and continued without abatement until about half-past seven P. M. when I was applied to. The pupil who visited her found the uterus was tumid with blood—the pulse small, accompanied with vomiting, faintness, and coldness of the skin. Brisk frictions were applied over the fundus uteri, and two fingers passed through the os internum. The uterus being thus stimulated to contraction, a large quantity of coagula and liquid blood was expelled; but the organ though now contracted continued

bulky—the pulse improved, there was no recurrence of hemorrhage, and he left her comparatively comfortable. At two A.M. six hours afterwards, I was called up to see her on account of retention of urine. The pulse was frequent but not very feeble; there had been no return of hemorrhage; the os internum was rather flaccid, but the organ though large was *firmly contracted.* At two P. M. the pulse was very small and feeble, no sickness or hemorrhage, and pain over the uterine region. Prescribed ammonia and beef tea. At five P.M. the pulse was barely perceptible, the respiration difficult, and the countenance sinking. I determined upon transfusion with the approbation of Messrs. Blount and Knowles, who saw the patient at this time; but before the apparatus could be obtained the patient expired. She was quite sensible up to the moment of death.

The efficacy of the superacetate of lead in restraining effusions of blood, particularly from the lungs, stomach, or intestines, has long been matter of observation. As a remedy in uterine effusions it cannot be considered so generally applicable. In cases of protracted hemorrhage however, it may be administered with great advantage, in irritable habits more especially. That any preparation of lead in a large dose is directly poisonous cannot be doubted. But this remark equally applies to many of the most valuable articles of the Materia Medica. Superacetate of lead is however a much safer medicine, taken either by the mouth, or employed as a glyster, than is commonly imagined. In small doses it does not act as a poison otherwise than by accumulation, a circumstance which denotes the impropriety of prescribing it in combination with opium. But whenever lead is exhibited, it will be necessary to watch its effects, and discontinue it as soon after the hemorrhage has ceased as may be consistent with prudence; lest in torpid habits, spasm or paralysis, either of the voluntary or involuntary muscles,

should ensue.* Under much depression this medicine will be quite inadmissible. With *mineral* acids lead is of course incompatible. The superacetate may be administered in pills, in doses of one or two grains combined with five grains of the extract of Hyoscyamus, and repeated once in five or six hours. After the expiration of forty-eight hours the pills should be discontinued, (for a time at least,) and the bowels evacuated by castor oil. Under these restrictions no risk can attend its repeated employment, should it be found necessary. I could add several striking cases in confirmation of the efficacy of lead in uterine hemorrhages arising at late periods after delivery.

Turpentine has also been recommended in cases of this description, but I have had no experience of its utility. It has been held, that the beneficial action of turpentine is to be ascribed to the excitement it produces upon the capillary vessels of the intestinal surface; but this theory of derivation by no means appears to be well established. In an hemorrhage attended with *immediate* danger to life, the plug, whenever admissible, claims the priority both over this and every other medicine, and must be promptly applied. A severe hemorrhage is rarely followed by an early and efficient degree of uterine contraction; and as the ends of the vessels are left in a state of relaxation, a protracted or excessive flow of the lochia is the result. In such cases the recumbent position should be continued a longer time than usual, and tonics and astringents, catechu for instance, had recourse to. The Ergot of Rye has also been suggested. I can with much confidence recommend the Sulphate of Zinc, in pills of one or two grain doses combined with a quarter or half a grain of opium,

* An instance of pulmonary disease occurred in this town, in which the administration of lead in large doses produced so much influence on the bowels, that for twenty-eight days the patient had no alvine evacuation.

or exhibited in the infus. aurantii. Solutions of zinc and alum, or oak bark, (which in common with catechu contains tannin), may be injected into the uterus with advantage.

A few observations here naturally suggest themselves upon what may be properly termed the constitutional treatment, or those means which are most useful in restoring the system when hemorrhage has ceased. I may in the first place observe, that during an active state of hemorrhage, cordials and stimulants should not be administered unless with the greatest caution; at the same time it must not be forgotten that under a state approaching to Asphyxia stimuli alone can be resorted to with prospect of benefit, and it may be needful to administer them most liberally. Indeed I am almost afraid to mention the quantity of brandy I have known given to a person under much depression, without producing other than a slight effect upon the circulation. But when re-action is established stimulants will be injurious; and as a heated apartment is not only oppressive to the patient, but also favors the hemorrhage, ventilation must be freely admitted, care being taken to promote the circulation in the extremities. Unless restoration is speedily obtained the defective and deteriorated state of the circulating fluids will not fail to impair the functions of the viscera in general, —the heart, brain, and stomach in particular. The management of the stomach is the grand object to be kept in view, and sustenance should be given in a form as little bulky as possible. Generally, from the impaired gastric energies, solid food produces oppression and sickness, and from its liability to be rejected is therefore inadmissible so long as the debility continues alarming. The yolk of an egg may be mixed up with wine or strong coffee, but nourishment even in a fluid form ought to be supplied very cautiously; for although weakness from loss of blood may be instantly occasioned,

strength can only be imparted very slowly. Should the œsophagus be paralyzed, an instance of which fell under my own observation, the system may be supplied with sustenance by means of the stomach pump, and strong broths, or other nutritious substances, may also be injected into the bowels. It must be admitted that after the first danger is past, the earlier, consistently with digestion, solids and animal broths are taken the better. Jellies, blancmange, as also milk, should constitute the patient's chief support. After the first three or four days it will be very desirable, (should nothing contra-indicate it,) that animal food with fresh malt liquor form the principal meal in the day. The advantage is two-fold, affecting the interests both of parent and child. After a severe hemorrhage the lacteal secretion is either not at all or but partially established; the breasts being quite flaccid, or the milk thin and watery. A generous diet, by renovating the energies of the body generally, excites the action of the mammary gland in particular; and, by promoting its functions, is also very conducive to those salutary changes in the uterine system, upon which the cessation both of hemorrhage and increased or protracted lochial discharges entirely depend. In addition to this, the child should be early and frequently put to the breast; blood is thus invited to the gland, and its secreting powers directly promoted. Attention to these points respecting a generous diet may also prove a great security against those very severe attacks of head-ache, common to persons who have sustained large losses of blood. But when recovery proceeds in a slow and imperfect manner, the countenance remaining very pallid, the appetite capricious, the tongue dry, the pulse sharp, rapid, and feeble, with head-ache, palpitation of the heart, œdematous swellings, and great debility, mild laxatives, tonics, bitters, preparations of bark, mineral acids, and change of air should be

resorted to. Under these circumstances the mother will be disqualified for the office of nursing; and since artificial food cannot be substituted with safety to the infant, a wet nurse should be procured whenever the circumstances of the patient admit of it; for even if the infant should not fall a direct sacrifice to dry nursing, it most likely will become the victim of disease. A very obstinate form of diarrhœa, which now and then succeeds severe uterine hemorrhage, must be treated on the recognised principles of medical science. Physical and mental tranquillity should also be enjoined until the patient is in an advanced state of convalescence.

Seven cases are selected as illustrative of the *immediate* effects of hemorrhage. The first of these made a very strong impression upon my mind:—

Case 1.—I had been attending, four miles from hence, a young woman in her first labour which was quite natural. I left her, on the labour being concluded, with the uterus perfectly contracted; but no sooner had I reached home than a messenger arrived to say that she was dead. Thinking it might be a mere fit of syncope, I returned back with all expedition, and found her very cold, sick, faint, and greatly exhausted; no external hemorrhage, but the pulse thready and barely perceptible. The uterus was soft, and occupying almost as large a space as before delivery; and on passing the finger per vaginam I discovered a large coagulum at the mouth of the womb. What was to be done? Fearful of any manual interference, and understanding also that the state of the patient was really improved, I determined to leave the case to nature, and contented myself with giving solid opium and brandy, and applying heat to the extremities and about the heart, hoping that re-action would gradually arise. At this time, however, I considered her case almost desperate. This was on Saturday evening. I found her on

Sunday morning somewhat better, but re-action was by no means restored. No contraction of the uterus. Monday, still better, but the uterus as large and soft as before. Tuesday, I understood that a few hours before this visit she had been in pain, and had passed a coagulum larger than a fœtal head. All the symptoms had subsided, and now, for the first time, I distinctly felt the uterus as small, tense, and contracted, as when I left her after the removal of the placenta.

Case 2.—I attended a young woman in her first accouchement. After delivery I left her at ten o'clock, P.M. as well as usual, with the uterus very favorably contracted. The discharge was natural. In two hours I was called up and informed she was dying. I found her in a state of coldness, and harassed with constant ineffectual retchings. The pulse was barely perceptible, and the hemorrhage which was very considerable, was both external and internal, as the uterus upon examination was found *distended* with blood. Ordinary means having failed, I introduced my hand, scooped out the coagula, and retained it in the cavity until there was a return of the natural contraction, and then gave an opiate. She did well.

Case 3.—At ten o'clock, P.M. I left my patient Mrs. K. after her delivery under favorable circumstances; the uterine tumour was small and firm. At twelve I was called out of bed and found her vomiting, excessively pale, the pulse small and feeble, and the uterus soft and distended with blood, and occupying a very large space in the abdomen. External pressure was unavailing; and though a large coagulum could be discerned at the os uteri, blood was rapidly flowing per vaginam, and the bedding was saturated. I introduced my hand, scooped out all the coagula, and kept it in the cavity until a complete contraction ensued. Counter pressure, cold

applications, and stimulants, were also applied. Recovery rapidly took place.

Case 4.—Half an hour after the close of a very tedious labour copious hemorrhage ensued. External pressure and other means succeeded in producing a temporary contraction, but the pulse could scarcely be discerned. The sinking was alarming, and the organ again became dilated. I then introduced the hand, removed a load of coagula and liquid blood, and thus saved, and barely saved, my patient's life. My pupil continued to embrace the uterus for two hours; there was no recurrence of the bleeding; the exhaustion however was extreme. Recovery was slow but perfect.

Case 5.—Half an hour after the expulsion of the placenta, on the termination of a very favorable labour, a lady was seized with an active hemorrhage. Under cold applications, brisk friction, and pressure, the uterus had resumed its contractions, and visible hemorrhage had ceased. About an hour had elapsed when the flooding recurred, copious in amount, and attended with the most alarming symptoms. The uterus, (which under this renewed effusion seemed to have lost all power of contraction,) was too bulky and indefinable to be grasped with effect, and frictions over its surface produced no action whatever. As the blood flowed in a stream, the hand was passed into the uterine cavity and a very large coagulum removed, having the form and impress of the organ which contained it.* The womb now contracted most

* It may perhaps be said, allow the clot or clots to be expelled by the contraction which the presence of the hand will occasion. To this it may be replied, that the uterus may be in so enfeebled a state as to be insusceptible of contraction, when distended either by a fluid or a solid body. If proof of this were wanting I might adduce a case of internal hemorrhage after delivery, (obligingly sent me for publication in this work,) in which the well known and most respectable practitioner employed on the occasion, kept his hand in the uterus, without once withdrawing it, *seven hours* before the corrugations of the womb were sufficiently strong to expel a large coagulum, which was contained

effectively, and the patient experienced no recurrence of hemorrhage, or interruption to recovery.

Case 6.—Mrs. ———, the mother of several children, having experienced a severe flooding immediately after the termination of her several accouchemens, on pregnancy again taking place, it was deemed advisable to adopt every precaution which skill or experience could suggest, calculated to

within the organ at the time the hand was passed. The womb, though sometimes manifesting feeble and partial contractions in the cavity generally, (exclusive of a firm and ring like contraction situated at the neck of the uterus previous to its being dilated by the hand,) conveyed to the fingers the feeling of soft wet leather. My friend had the satisfaction of seeing his interesting patient recover, after lying in an apparently hopeless state for many hours. I have not detailed this important case at length; doubts having arisen in my mind as to the advantage of retaining the hand in utero for so long a time. Without raising the question whether the patient's state will admit of the hand being safely conveyed into the womb, and assuming that external means have proved inefficient, the intention of the measure is doubtless to stimulate the organ to act and expel its contents. But when contractions do not shortly arise from the presence of the hand, I do not see what advantage will result from keeping it within the cavity when distended with a large coagulum. Whilst the coagulum remains, hemorrhage may still go on, and we cannot with *certainty* command the bleeding vessels by pressure. But by dislodging the clot we can compress the bleeding surface, in the manner already described in this treatise. It is not probable that the small clots, contained within the calibres of the uterine vessels and extending some distance within them, will come away on withdrawing the large coagulum, which is almost, if not entirely, loose within the uterus. We thus give the organ an opportunity to contract and permanently close the vessels. Our other means moreover, cold injections, friction, and pressure, for instance, may be more effectively employed than they could previously to the womb being evacuated. "This case (observes the writer) affords a very striking demonstration of the great uncertainty of relying upon external pressure, which had been firmly applied, during the whole period, without exciting a permanent contraction of the uterine fibres. Another fact was also clearly exhibited, viz. that contractions of the uterine fibres may occur in any part of the uterus, and in any form; and that these contractions are by no means certain of remaining permanent, for they may subside altogether so as to permit a renewed flow of blood. Although no advocate for a hasty or impatient interference, I attach great importance to the introduction of the hand for the purpose of suppressing uterine hemorrhage. In cases where life is threatened by great loss of blood, the parts are yielding and offer very little resistance, and are consequently less easily excited to inflammatory action."

restrain so alarming an effusion. It was agreed to try the effect of very firm pressure upon the uterus, by means both of the hand and a bandage, as soon as the delivery of the child should be accomplished, and, unless an hemorrhage should previously arise, to consign the disengagement of the placenta entirely to the efforts of nature. Owing to the suddenness of the labour, the case accidentally fell under the management of a practitioner residing near at hand, who after receiving the child, and waiting the period usually observed, (a period too generally determined by the lapse of time, instead of uterine contraction,) withdrew the placenta. On the arrival of the confidential practitioner, about an hour after the process had terminated, he found his patient in a state of death-like exhaustion. It was discovered on examination that she had suffered a very copious hemorrhage, which however up to this time had escaped observation. In order to administer some brandy this gentleman raised his patient's head from the pillow; but although she swallowed the stimulus, vitality was at its lowest ebb, and she instantly expired.*

Case 7.—The following case derives additional interest from the circumstance of transfusion having been performed. It occurred in the person of Mrs. Hill, a spare and particularly delicate woman, of very small stature, but having a well formed pelvis, and the mother of three children. I attended in her several deliveries. The first labour was favorable. The second equally so, until half-an-hour after the expulsion of the placenta, when an hemorrhage came on, which, not

* This case, for which I am indebted to a friend, shows the great importance of so conducting a labour in a person subject to hemorrhage, as will best ensure the gradual contractions of the uterus upon the several parts of the child in succession, even the feet; and the danger of using any effort whatever by means of the funis, previous to the resumption of uterine action.

being restrained by external pressure, required the introduction of the hand. The third labour commenced on Thursday night at ten o'clock, with vomiting and pain, which had no distinct intermission. At two o'clock the following morning, I was summoned to her in consequence of an hemorrhage which had just set in. I found the os uteri dilated about the size of a half crown, with the membranes flaccid but projecting into the vagina, and a discharge of blood unusually copious at this stage of labour. As the head was descending in the pelvis I immediately ruptured the membranes, and the hemorrhage ceased entirely for about half-an-hour. It was then renewed, but the child was born shortly afterwards, being about four o'clock, and after two pains the placenta was spontaneously expelled. I placed my hand over the pubes and discovered the uterus reduced to as small dimensions, and in as tonic a state of contraction as I have ever known it; the pulse was perfectly natural, and the bandage firmly secured. Recollecting what had happened after the former delivery, I remained in the apartment, and did not allow the patient to be moved. After the lapse of from ten to fifteen minutes she expressed herself as being very faint. The pulse could scarcely be distinguished, and the uterus was soft, distended with blood, and occupying a great part of the abdomen. I resorted to friction and active pressure, emptied out the blood, and employed cold affusion on the naked abdomen, in the manner lately recommended by Gooch, and formerly by Chapman. The uterus was repeatedly emptied of its blood, but dilated again and again, attended with a state of constant faintness, (not a transient syncope,) a pulse barely perceptible, and cold perspiration. I therefore introduced my left hand into the uterine cavity as high as the fundus, making counter pressure with the right; a female attendant employing largely during the time the

cold affusion. I should here notice the great relief this application produced; my patient was continually exclaiming "the water, the water;" it acted as a shock and was extremely grateful to her. I also gave her a moderate quantity of brandy, but the heart's action underwent no improvement. My friend, Mr. Knowles, came to my assistance and brought some Ergot of Rye, but prior to his arrival she had lost the power of deglutition, and had fallen into a state of entire insensibility. Having stayed the hemorrhage, and also secured the return of the uterus to a tolerably small size, though it continued quite soft, I removed my hand after it had been in the cavity upwards of an hour and a half without having once been withdrawn.* I had an opportunity of experiencing during this time the alternate dilatation and contraction. Every now and then I thought my hand would have been expelled, but the open and flaccid state soon recurred. This happened several times. The depression kept augmenting, the pulse becoming more and more indistinct. Heated bricks were applied to the feet, a bladder of hot water to the cardiac region, and the bandage tightly secured. At eight o'clock, being four hours after delivery, a tea-spoonful of laudanum was with much difficulty forced down the throat. She was then, and had been for nearly an hour, in a constant state of jactitation, and in a dewy sweat, the features pinched in, the respiration difficult, with the sound of air passing through a quantity of mucus in the bronchia. The laudanum produced a material advantage by subduing the restlessness; in other respects no favorable impression resulted; the pulse indeed was more indistinct and rapid than before. It now occurred to me that no case could be better adapted for trans-

* The compression exerted both from within and from without prevented further hemorrhage. My object in retaining the hand so long was to secure the return of the uterus to as small a size as possible.

fusion; six hours had elapsed from delivery, no degree of re-action was apparent, the patient remained restless, very cold, and totally insensible, and her situation had become imminently perilous. Mr. Wood, whose opinion was taken on the point, agreed as to the propriety of the measure. Assisted by this gentleman and Mr. Knowles, I proceeded to the operation. The syringe, (which contained exactly four ounces,) was fully charged with venous blood drawn from the arm of the husband; and about two drachms being expelled with the air in the tube, the remainder was wholly injected into the median vein of the right arm, (previously laid open for the purpose,) in a slow and equable manner; the patient was totally unconscious of the proceeding. In less than five minutes, Mr. Wood remarked, that the pulse of the opposite arm was more distinct than before the operation; in about twenty minutes consciousness in part returned; and after the lapse of an hour the general improvement was very marked, but the pulse of the right arm remained imperceptible. Beef tea was directed to be taken in small quantities. Nine P. M. Friday, no pulse to be felt in the right arm,—in the left improved and beating one hundred and forty. Arm tense and swollen. Thirst excessive. Eight A. M. Saturday, pulse in the right arm distinguished feebly,—in the left improving in strength, and one hundred and thirty. Nine P. M. no difference in the pulse of either arm; beating one hundred and thirty; abdomen large and flatulent, and rather painful. Fomentation, and a purgative injection of chamomile infusion and soap. Eight A. M. Sunday, pulse improving—one hundred and twenty; the breasts exceedingly flaccid. From this time the improvement continued progressive. That death was arrested solely by the transfusion, I will not assert, inasmuch as the opium exerted a beneficial effect. This case however, in addition to Dr. Blundell's

valuable researches, satisfactorily proves that transfusion may be performed, not only without injury, but with decided perhaps incalculable benefit, under a state of the most painful anxiety, and in connexion with the finest feelings and bonds of humanity. The ancient scriptural expression applied by Adam to Eve, "bone of my bones and flesh of my flesh," seems to have been intimately realized in this assimilation of the husband's blood with the blood of the wife, this fluid being the element both of flesh and bone.

CHAPTER XXV.

ON THAT FORM OF GENERAL ANÆMIA CONSEQUENT ON LOSS OF BLOOD AND SUCCEEDED BY VIOLENT RE-ACTION OF THE SYSTEM.

In addition to those more immediate and ordinary consequences of flooding already discussed, there is one peculiar state of the system, attended by very dangerous debility, which remains still to be noticed. The term general Anæmia, signifies that condition of the system occasioned by an imperfect state of the circulating fluid, usually by loss of blood; the heart and brain being thus deprived of their natural stimulus, the secretions of the body are in consequence diminished as well as vitiated, and general disorder is the result. The characteristics of this condition of the system are by no means uniform. Though rarely terminating in organic lesion, this state exhibits an anomalous train of those morbid actions, which, previous to the appearance of Dr. Marshall Hall's researches on the morbid effects of large losses of blood, were supposed to denote alteration of structure. In many of these cases we witness symptoms of high nervous excitement only, similar in kind, though far milder in degree, to that form of morbid sensibility of the brain, which now and then succeeds an excessive flow of the menses. In other

instances the sensibility is so acute as intimately to resemble cerebral inflammation; but, on the subsidence of the first symptoms, a contrary state occasionally occurs, and we may then notice some of the features of apoplexy, or rather that state of coma which attends the last stage of life in renal and other visceral hemorrhages. In reference to this form of Anæmia, it may be remarked, that the symptoms which denote disorders of the nervous and vascular system *generally*, are often to be observed after a severe uterine hemorrhage. Of these symptoms, which usually correspond with the amount of blood lost and the manner in which it has escaped from the body, it may perhaps be useful to give a brief outline. The countenance is of a pallid and waxen hue, appearing almost exsanguineous; the superficial vessels of the body are scarcely discernible, and the skin generally pale. There is an inordinate action of the heart, with palpitation, the pulse being full, bounding, frequent, and irregular, but it is sometimes sharp and compressible. The functions of the brain are exceedingly disturbed; thus we have giddiness and syncope, violent throbbing of the arteries, especially the temporal, accompanied with a sense of tightness or compression, great pulsation of the vessels of the neck, intolerance of light, disturbed sleep, dreams resembling delirium, and attended with a degree of mental agitation which has even terminated in mania, a distressing sensation on awaking, stupor, sometimes convulsions, tinnitus aurium, and those various distressing sensations in the auditory nerve common to elderly people, and which usually are aggravated by depletion. The respiration is quickened, accompanied with sighing, and a desire for fresh air; it has in some instances been accompanied with stertor. In this general disturbance the gastric functions cannot fail to participate; accordingly we find marked symptoms of defective digestion, and languid

action, in the whole tract of the intestinal canal. The derangement either of body or mind may be universal. In the words of Andral, "when the system loses a large quantity of blood in a short space of time, the action of several organs is singularly deranged; the functions of the nervous system are peculiarly affected, producing not only faintings, and the ordinary and natural symptoms of debility, but likewise other phenomena, which are generally supposed to depend on an over excited state of the nervous system. Thus, in such cases there often supervene, delirium, convulsions, palpitations, and laborious respiration. The dyspnœa proceeds from the air inspired bearing an excessive proportion to the blood which it has to aerate. The function of digestion is also impaired; as the due performance of this process requires that the stomach, when it has received the food, should become the seat of a certain degree of sanguineous congestion; which in persons labouring under general anæmia is manifestly impossible. All these morbid phenomena subside as a fresh supply of blood is generated in the system."*

This complaint will readily be distinguished from those more formidable diseases which affect the cerebral system and implicate its structure, principally by the fact of a copious hemorrhage having preceded the symptoms, and in some measure by the effect of the remedies exhibited. As to the physiology and pathology of this disease, it may be remarked, that the fibrinous part of the blood is generally defective, since it wants both tenacity and redness, whilst the serum is thin and in excess; indeed the peculiar action of the heart and arteries has been ascribed to the blood being thin, diminished in amount, and deteriorated in composition. It has also been suggested that the blood, from a

* See Andral's Path. Anat. vol. 1, sect. 1, chap. 2, p. 99.

supposed activity of the absorbent system, acquires an inflammatory character. But the mere re-action, when very violent, may occasion a buffy state of the blood. Without entering into any argument upon the point, instances have undoubtedly occurred, in which the stimulating plan has altogether failed, and where it has been needful in consequence to substitute evaporating lotions to the head, with the mildest treatment, and a very gradual return to a more generous diet. Hall observes, "It may be necessary to subdue the throbbing action of the head even by local bleeding; and it is most remarkable how small a quantity of blood being taken will relieve. Two or three leeches are frequently quite sufficient."* This however is the exception and not the rule. In a few cases the rapidity of the circulation has been found incompatible with healthy structure. Disease of the heart, directly succeeding an hemorrhage, in persons who had experienced no previous affection of the organ, is said to have proved fatal within a few weeks. Serous effusions within the head and chest have also been known to terminate life in these cases. To restore the system, remedies of a sedative and stimulant kind will be indicated, and indeed whatever is calculated to promote the functions of digestion. Chylification and sanguification will consequently be increased in the same ratio. The treatment should comprise camphor, and ammonia, lupuline and other vegetable tonics, mineral acids, and, with a view to generate the red particles of the blood, preparations of steel as soon as the system will bear it. The tinct. ferri muriat. in infus. aurantii is perhaps the best medium in which steel in effective doses can be administered. Opium may be necessary not only to procure

* Cyclop. of Pract. Med. part 3, art. Blood, Morbid states of. For a minute account of this state of the system, see also Dr. M. Hall's Pract. Researches.

sleep, but also as a stimulus; small doses having, as Paris observes, been known "to sustain the powers of life under circumstances of extreme and alarming exhaustion."* But in the great majority of cases hyoscyamus is better adapted to allay irritation. Under exhaustion with sinking, Dr. M. Hall suggests the propriety of employing transfusion and galvanism, and, when sensibility is much blunted, mustard sinapisms to the feet and nape of the neck. In all cases, warmth to the feet, pure air, a regulated temperature, and strict quiescence in the horizontal position, (the position of the head however being regulated by the state of its circulation,) will be highly necessary. In addition to this, the diet must be nutritious, taken frequently and in small quantities. It should principally consist of animal broths, jellies, milk, eggs, cocoa. A rigid attention to the intestinal functions will be indispensable. Constipation is an attendant symptom of this disorder; but, important as it is that the bowels be regularly moved, a single free evacuation in the twenty-four hours, especially as the secretion of milk is very scanty, will be sufficient. A treatment founded on these principles constitutes the most successful management of the disorder. If depletory measures be pursued, a fatal termination will in all probability result.

* Pharmacologia, vol. 2, p. 142.

CHAPTER XXVI.

ON THE OPERATION OF TRANSFUSION.

It is not my intention to enter into the historical account of this operation. Very crude and erroneous notions were entertained respecting it in early times. The blood injected into the human veins was then supplied from the inferior animals. To this practice, we find the sarcastic author of Hudibras alluding in the epistle to Sidrophel, in the following verse,

"Can no transfusion of the blood
That makes fools cattle do you good?"

If any credit be due to the ancient Poets, it would seem that the operation was known, though perhaps not practised, at a very early period. Thus, Medea is represented by Ovid as having by this means renewed the youth of Æson, and a farther allusion is made to it in the words which she addresses to the daughter of old Pelias.

"Quid nunc dubitatis inertes?
"Stringite, ait, gladios: veteremque haurite cruorem,
"Ut repleam vacuas juvenili sanguine venas.
"In manibus vestris vita est ætasque parentis."*

Much may be urged in favour of this operation, which has

* Ovidii, Fab. iii, lib vii.

now been performed about twenty times with the greatest success. It is simple in principle, safe, easily performed, and promises to constitute a valuable addition to our resources in the treatment of hemorrhages and their immediate effects. It appears from Dr. Blundell's experiments upon the dog, that "the injection of canine blood was really applied to the nourishment of the system, and consequently was something more than a mere stimulus to the heart's action." The recovery of patients from hemorrhage after sickness, vomiting, coldness of the skin, restlessness, the absence of pulse in the superficial arteries, and whose vital powers had been reduced to the lowest standard compatible with existence, cannot fairly be urged in disparagement of the operation; for whilst a few of the stronger constitutions emerge from such an exhaustion, the majority of results are far less fortunate. This delicate operation, as it ought not to be lightly undertaken, but should be had recourse to only as a *dernier ressort*, so neither ought it to be postponed until all rational hopes of resuscitation are past, for then the doubts and derision of the sceptic would be confirmed, and the remedy would be brought into obloquy and contempt. I have availed myself of Mr. Waller's description of the operation, as being the most simple I have yet seen. "To the barrel of Lloyd's syringe is appended a small funnel, by means of which contrivance the blood passes directly from the arm of the person supplying it into the syringe, without being obliged to be first received into another vessel: some little time is thus gained, which is an object of importance. A stopcock is also attached to it, by turning which the communication may be opened either with the funnel or with the extremity of the instrument, according as the blood is either being received into the syringe from the funnel above, or is being passed into the vein of the patient.

The instrument is made of brass, and well lined with tin; and it is scarcely necessary to add, should be perfectly cleaned before it is used, and slightly warmed by passing tepid water several times through it, taking care not to use it too hot, as it would have a tendency to coagulate the serum of the blood. The basilic or the cephalic vein of the patient is to be laid bare to the extent of an inch or an inch and a half, taking care to divest it of its surrounding cellular membrane. A blunt-pointed bent probe, or a curved and blunt needle, is then to be passed under its lower extremity, in order that pressure may, if necessary, be made upon it with the finger, and the blood be prevented from oozing out; which, by obscuring the orifice, would be productive of difficulty and delay. An opening should be made into the vein large enough easily to admit the point of the tubule which is attached to the extremity of the syringe. This instrument is made to contain two ounces only, it appearing from previous experiments to be safer to inject a small quantity at a time. These preparatory steps having been taken, a very free incision is to be made into the arm of the person about to furnish the blood, so that it may pass in a full stream into the funnel, and be from thence absorbed into the syringe; the stopcock must then be turned, and the funnel removed. The next part of the operation consists in expelling any quantity of air that may be contained within the instrument: for this purpose it is to be placed vertically, the handle below, the point upwards; the piston being gradually pressed upwards, till about a teaspoonful of blood is expelled. The point of the finger being then placed over the nozzle, the horizontal direction is to be given to the instrument, which should be insinuated about half an inch within the vein, in the direction, of course, towards the heart, and the blood *very slowly* and cautiously injected. This is a point of great importance to be observed; for the heart's action is in these

instances so weak, that a sudden influx of blood would, in all probability, at once overwhelm it, a fact witnessed by the author in experiments upon the horse. On removing the syringe from the vein, it should be instantly well washed out with cold water. Before repeating the injection, it is better to wait for the space of four or five minutes, to allow the blood time to circulate over the body; it may then be repeated in the same manner, the patient being narrowly watched with regard to the effect it has produced upon her. Eight, ten, or twelve ounces of blood may be thus injected; and it will seldom, if ever, be found necessary to exceed this latter quantity, even where the hemorrhage has been very profuse. The intention of the operation is not to restore the blood-vessels to the same degree of fulness as previously existed, but so far to add to the power of the system that the heart may be enabled to continue its contractions. It should be remembered that this organ (the heart) having been for some time acting on a greatly diminished supply of blood, is well prepared to receive the stimulus which an additional quantity would afford it, although small in comparison to that which has been lost. This circumstance is proved by the fact that the pulse evidently improves, sometimes after the first, but always after the second injection; and the effect is in general permanent, there being no recurrence of the syncope afterwards, which affords pretty satisfactory evidence that the injected blood does not act as a mere stimulus, but that it gives *power* to the system. When a sufficient quantity of blood has been introduced, the probe or needle is to be removed from the arm, the edges of the wound brought together by means of adhesive plaster, and over this a bandage loosely applied."*

The transfusion syringe should be in the possession of

* Elements of Midwifery, p. 93.

every person practising Midwifery. In three cases of recent occurrence in this town, the patients died during the delay in obtaining the instrument. Of these cases the one here detailed appears to have been admirably adapted for the operation. A woman subject to hemorrhage was seized with labour pains which terminated within an hour. On the birth of the child, the patient being without assistance and in a standing position, violent hemorrhage arose; and a neighbouring Surgeon was immediately called in. After waiting nearly an hour, he introduced his hand and separated the placenta. The blood lost in the operation was not greater than usual; the uterus became firmly contracted; there was no return of hemorrhage; but the exhaustion progressively increased. I received a message to see the patient, with a request to bring with me the transfusion apparatus; but she had expired before I arrived, being about two hours after the birth of the infant. Consciousness was unimpaired up to the moment of dissolution. On the post mortem examination the following morning, the uterus was found very efficiently contracted; but the whole organ, in common with the contents of the abdomen, was as white as though the parts had been macerated in water for many days. The uterine vessels *contained no coagula;* the body seemed absolutely drained of its blood.

NOTE ON CHAPTER VII, PAGE 40.

As respects the suggestion of puncturing the membranes in the aggravated and imminently perilous vomitings, of advanced pregnancy, the author, on perusing the London Encyclopædia, (vol. 14, article Midwifery, p. 543, sect. 180.), finds it stated that it is very justifiable to bring on premature labour when the vomiting has reduced the patient to a state of extreme danger, and reference is there made to a case mentioned by Dr. Marshall Hall, in which the vomiting continued, and terminated fatally in the seventh month of utero gestation.

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